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MOTHER AND CHILD

BY

EDWARD P. DAVIS, A.M., M.D.

PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC; VISITING OBSTETRICIAN TO THE JEFFERSON, PHILADELPHIA, AND POLYCLINIC HOSPITALS, ETC.

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PREFACE.

THE request of the publishers to prepare a second edition of this book brings freshly to our remembrance our loss sustained in the death of Dr. John M. Keating. It was the writer's privilege to be associated with him in the preparation of the first edition. This edition has been remodelled in accordance with the various changes which time has brought about in the department of medicine of which it treats. The plan originally adopted and carried out through many of Dr. Keating's suggestions has been followed in the preparation of this edition.

The writer's acknowledgments are due to his nurses, from whose practical experience much valuable material has been obtained. To Miss Ellen V. Hayes, Chief Nurse of the Jefferson Maternity, and to Miss S. J. Martin, his thanks are due for the preparation of the

illustrations; to Miss M. E. Smith, Chief Nurse of the Philadelphia Hospital, he is indebted for formulæ used in the hospital; and to Miss Mary A. Nick, from whom he obtained recipes for the preparation of gruels, jellies, and purées. The Dietary of the Jefferson Hospital has also supplied some useful recipes.

No. 250 South Twenty-first Street,
Philadelphia, June, 1902.

INTRODUCTION.

THIS book is not intended to supply prescriptions for medicines nor to take the place of the family physician. It is designed to help him in the care of his patients by placing at their disposal information which physicians commonly give to their patients. The physical prosperity of mothers and children is so largely dependent upon the faithful observance of simple precautions, that anything which gives information regarding this care cannot fail to be useful. The form of the present edition of the book has been largely suggested to the writer by the needs of his own practice and embraces much of the advice which he usually gives to his patients.

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MOTHER AND CHILD

PART I.—THE MOTHER.

CHAPTER I.

PREGNANCY.

Conception.

In order to comprehend clearly the method of reckoning the duration of pregnancy, the relation between menstruation and ovulation must be understood. Ovulation, or the formation of ova by the ovaries, is independent of menstruation. Conception may occur at any time during the active physical life of woman. Cases are sometimes seen in which menstruation has been absent for months, but in which conception occurred. It is also possible for a woman to conceive while nursing a child and for menstruation to be continually absent for a number of years. Conception is most apt to occur either before or after the usual time

for menstruation. If the month be reckoned at thirty days between menstrual periods, the ten days immediately preceding menstruation and the ten days immediately following the time when it occurred or should have occurred are the most favorable periods for conception. As menstruation occurs in most patients, it affords the only basis which we have for computing the duration of pregnancy.

The conditions which favor the occurrence of conception are in many cases obscure. General good health is often not present in women who bear children frequently. Recovery from severe illness seems in some cases to make the patient more liable to conception. The fecundity of the poor shows that luxury is not a requisite for fertility. Unfortunately, the drunken and vicious bear children much too frequently. In general, sound health and a life as normal as surroundings will permit favor healthful pregnancy, and abnormal conditions do not conduce to healthful conception.

Signs and Symptoms of Pregnancy.

Pregnancy may exist for several weeks and occasionally for several months without signs or symptoms. Some time is required for the passage of the impregnated ovum to the

uterus, and during this time there is no physical evidence of pregnancy. After the ovum reaches the womb the uterus commences to enlarge very gradually, and several weeks may pass before sufficient change has occurred in the uterus to make a diagnosis possible. In complicated cases a positive diagnosis cannot be made until seven months have elapsed, and in cases where pregnancy exists in patients having tumors it may never be suspected. From these facts it follows that the patient may not receive a positive statement from her physician regarding the existence of pregnancy for some time after she suspects it herself. In most cases, within the first ten weeks after the last menstruation, the physician can state that in all probability pregnancy is present or is absent.

The most usual symptoms of pregnancy are cessation of or very much diminished menstruation, nausea and vomiting in the morning, enlargement of the breasts, often with tingling sensations or shooting pains, enlargement of the neck, gradual enlargement of the abdomen, and disorders of digestion. These, however, may all be present and the patient be positive that she is pregnant when no real pregnancy exists. Only a physician can posi-

tively determine the presence or absence of pregnancy.

Where pregnancy is really present, nausea and vomiting gradually cease, the abdomen steadily enlarges, the movements of the child are recognized, milk gradually forms in the breasts, and by examination the presence of the child and its position in the mother's womb may be ascertained.

Duration of Pregnancy.

There is no fixed limit to the duration of pregnancy. The average is from two hundred and seventy to two hundred and eighty days. Cases are sometimes seen in which the pregnancy lasts three hundred days and more. A child has been born at twenty-six weeks pregnancy and has survived. There are several reasons for the inability to determine definitely the duration of pregnancy. We cannot tell exactly the time of conception, and circumstances influence the duration of pregnancy greatly. Thus, a woman who is perfectly tranquil in mind, sound in body, and amid peaceful surroundings, will go to the natural limit of gestation; while another, harassed by care or over-taxed by pleasure, frail and nervous, will not go to the natural limit of preg-

nancy, but will give birth to a child prematurely. The proportion between the size of the mother and that of the child has something to do with the duration of pregnancy. Nature usually brings about the birth of the child when fully developed, but when not too large to pass safely through the body of the mother. Examination can usually determine with considerable accuracy the period of pregnancy. It is far better to rely upon the physician's examination than to make plans based exclusively upon the date of the last menstruation. After the patient is seven months advanced, a skilful physician can usually recognize the period of gestation with accuracy.

A Successful Pregnancy.

A pregnancy is successful which results in the birth of a healthy living child, followed by the complete recovery of the mother. An unsuccessful pregnancy is one in which the child does not survive or is not sound in health, or in which the mother does not regain good health. In sound women, pregnancy under favorable conditions predisposes to good health. Even where patients are not themselves perfectly sound, so much can be done by modern science to guard them against the

dangers of pregnancy that healthy children may be born, and the mother's health preserved in such cases. While pregnancy cannot be called a disease, it is a condition which requires observation and care from its earliest time. The circumstances of modern life are such that few women lead natural lives, and hence the modern woman is exposed to dangers during pregnancy which others might not have. These dangers can usually be overcome and pregnancy be successfully conducted to its natural termination. To accomplish this, the mother must consent to make her condition of paramount importance. The demands of society, various enterprises, the care of other children,—everything, in short, but matters of life and death,—must be made secondary to the purpose of fulfilling the natural function. When we remember that upon the mother's condition and surroundings during pregnancy depend the life and health of her child, and especially its physical happiness in the future, this view does not seem unreasonable. If all patients were willing and able to subordinate the other factors in their lives to their care during pregnancy, there would be sounder, healthier, and happier children born into the world.

The Dangers of Pregnancy.

It would be false and wrong to unduly alarm pregnant patients. As we have said, pregnancy is a natural function, and usually results in improved health and strength to the patient. This, however, is true when she receives good care and when she is willing to avail herself of it. It is sufficient to intimate the principal dangers to which the pregnant patient is exposed by reason of her condition.

The danger that abortion will occur and that the product of conception will be lost before it can live outside the mother's body is present in all cases. While abortion is not a deadly danger to the mother, it is a very serious menace to her health, and often prevents subsequent pregnancy. It is most important that abortion should not occur if it can possibly be prevented.

The conditions of the mother's life change during pregnancy. She virtually carries on two physical lives; and so the problem of nutrition and waste becomes double in its importance. If proper care is taken at this time, the matter is readily adjusted with most patients. If attention is not given to the

patient's food and to the disposal of the waste of the body, severe illness may result.

These are the two great dangers to a successful pregnancy which exist in all cases. Each may be avoided successfully in nearly all patients by the exercise of good sense and reasonable care. Only a physician can appreciate the signs and symptoms of danger in these cases, and so the patient must expect to place herself under his guidance and with his aid to pass through a successful pregnancy.

The Discomforts of Pregnancy.

The discomforts of pregnancy may cause considerable suffering, although they may not be dangerous. Disturbances of digestion, altered sensations in the skin, inability to sleep naturally, weight and heaviness as pregnancy advances, and discomfort caused by the pressure of the growing child, may greatly annoy the patient. Fortunately, the physician can do much to lessen such discomfort, and modern methods of treatment have robbed pregnancy of many of its greatest annoyances.

CHAPTER II.

THE HYGIENE OF PREGNANCY.

Food.

By the hygiene of pregnancy we understand that general care of the health which greatly lessens the patient's discomfort, and often avoids dangerous complications. We can best understand what such care must be if we consider the needs of the patient in a healthful pregnancy.

The patient is nourishing two lives,—her own and that of the child. It would seem natural that her appetite should be increased and that she should be able to take a greater amount of food than usual. In some healthy women this occurs. The patient is not sick in the morning, but takes more food and feels better during pregnancy than when she is not in that condition. In most patients, however, digestion is more or less disordered. It is evident that the quantity and the kind of food taken must be governed by the condition of the patient's digestion. If the patient cannot digest an ordinary mixed diet, her physician will advise the simplest foods, and trial will be

made until that diet which best agrees is finally selected. Patients experience the greatest comfort when during pregnancy a successful diet is chosen. Physicians will supply to their patients diet-lists varying with the physical needs of each individual. In general, it may be said that those substances which are the most valuable foods are to be selected for use during pregnancy. Thus, milk, good bread, fruits, vegetables, and the most nourishing meats are selected. As pregnancy advances, the ability of the patient to digest meat often grows distinctly less. In many cases the quantity of meat must be reduced to a minimum, and with many patients it is omitted from the diet during the latter portion of pregnancy. Indigestible articles of food are never indicated during pregnancy. Those substances which are not foods, but which are drugs, are rarely needed in this condition. Such are alcohol, and tea and coffee in large quantities. In order that food may nourish, abundant water is necessary for the body, to provide fluids which act upon the food and to secure the dissolving of waste matter. While water is not a food, nutrition cannot proceed without it, and hence it is most valuable at this time when the patient is feeding two beings.

Nausea and Vomiting.

Morning sickness, or nausea, from which many persons suffer, can often be relieved by very simple means. It is better for the patient to quickly and gently empty the stomach as soon as she rises in the morning, if she can do so. She will expel a small quantity of mucus and often a burning or acrid fluid. This is made easy if the patient will drink rapidly a full glass of water. This will be immediately rejected and with it the mucus and fluid. If the patient will then lie quietly, with her head low, she may be able to retain food after a few hours. If not, her physician will advise some method of treatment which will relieve her suffering. Vomiting during early pregnancy is a usual and not an unfavorable symptom, and should not occasion concern. If the patient is nauseated during the greater part of the time, even though she may not vomit, she should consult her physician at once.

Beverages.

In early pregnancy, especially, much can be done for the patient's comfort by a judicious selection of beverages. Effervescing water,

such as Apollinaris, Poland water, Vichy, and any pure aerated water, will often be found of great comfort. A pure water is desirable; and if this is not readily obtainable, water may be boiled, and then exposed to the air and used as desired. Most patients are in the habit of drinking either tea or coffee when in good health. Neither of these is necessary during pregnancy; but if the patient desires them, they should be used in small quantities only, freshly made and taken with food. Light cocoa agrees well with many; buttermilk is very useful with some patients, and, in cases of necessity, other beverages may be prepared which prove most acceptable. Not only is alcohol not necessary in healthful pregnancy, but it is positively injurious to mother and to child. If there were no physical reason for abstaining from alcohol during pregnancy, the fear of inebriety in the after life of the child should be sufficient warning. Pregnant patients should drink more than the usual amount of water. From one to two quarts in twenty-four hours should be taken. This may be between meals, on rising in the morning, and before retiring. The temperature of the water may be agreeable to the patient, but extreme cold or heat should be avoided.

Clothing.

As pregnancy advances, the growth of the child obliges the patient to loosen her clothing. We occasionally see patients who do not accommodate the clothing to the growth of the child, and in whom the interruption of pregnancy or injury to the child results. Most patients are much more comfortable if their clothing is arranged to accommodate the growing womb very early in pregnancy. There is one point of great importance in dress, and that is, that during pregnancy pressure upon the abdomen should be avoided. The patient may fulfil this in any manner best suited to her comfort and to her purse; but the indication remains positive and the same with all patients. The suspension of clothing from the shoulders and the substitution of a suitable waist for the corset is usually successful in relieving the patient's discomfort and in preventing considerable danger of abortion. There are several sorts of waists available in the shops from which the patient may select. A well-fitting waist is comfortable about the bust, does not press upon the abdomen, is supported by the shoulders, and is so made that the underclothing

may be buttoned to the waist, and not fastened about the abdomen. If the patient prefers, she can have made for herself a waist fulfilling these indications. The earlier the dress is adjusted after pregnancy is recognized, the better for the patient in every way. Those who decline to accede to the needs of the situation are very apt to suffer greater inconvenience during pregnancy and confinement.

Not only is the question of pressure important as regards clothing, but also the texture of the clothing next the skin. Here again each patient is a law to herself. If she is to continue in good health during pregnancy, the blood must circulate freely through the skin. With some women this circulation is good when linen only is worn next the skin; others can use silk; others require woollen. The climate in which the patient lives has an important bearing upon the choice of clothing. Thus, a patient who goes from a hot city to the northern sea-coast must guard against the chilling of the body which follows a radical change of temperature. Woollen clothing is indicated in such a case. The patient living inland, where the air is warm and dry, is often better without woollen, or with underclothing containing but a small quantity of wool. Here

also the physician's advice must be invoked, and it should be conscientiously followed.

Patients feel a natural modesty in concealing the condition of pregnancy as long as possible. This can readily be done by a proper adjustment of the clothing. Those who imagine that the corset is valuable for this purpose are greatly mistaken. Alterations in the clothing which bring out the lines of the entire figure are more successful in this regard. The effort to compress the waist causes protrusion of the bust and of the lower part of the abdomen, which draws attention to the altered shape. Loosely-fitting clothing properly adjusted to the figure will often permit the patient to enjoy perfect comfort without attracting attention to her altered condition.

No portion of the body should be tightly constricted by clothing during pregnancy. Circular garters should give place to those attached at the sides. Tight bands should be loosened, as swelling of the limbs and other parts of the body may follow their use. In the latter part of pregnancy the patient may require shoes larger than she is accustomed to wear. This requirement should be promptly met, as much discomfort is sometimes caused by the effort to wear the shoe usually employed.

While it is possible to go through the entire pregnancy with but little alteration in clothing, still the best results for mother and child are not obtained in this way. The mother is far less comfortable and her general health far less good than if she adjusts her clothing to her altered condition. It is possible to seriously injure the unborn child by prolonged compression of the abdomen. A further reason for adjusting the clothing to suit the case lies in the fact that it is of the utmost importance that the patient's muscles should be free from restraint while she is pregnant. During labor these muscles are needed to assist in the birth of the child; and if they are dwarfed by compression, the labor is longer and more painful. The figure of the patient will be regained more quickly after her recovery from labor and will be much better if she has not practised compression during pregnancy. She cannot prevent a permanent increase in the bones and in the general framework of the body, but this increase is symmetrical and not ungraceful. If nature be not interfered with, patients often develop physically during pregnancy and are much improved in appearance after their recovery.

Exercise.

Some kinds of exercise are exceedingly beneficial during pregnancy, while others are most injurious. During early pregnancy the patient may feel too badly to undertake active exercise; and should this be the case, she may yield to her feelings and keep as quiet as possible. As pregnancy advances, however, she should be able to take exercise, and feel much better for so doing.

Walking at a comfortable pace upon a level surface is the most beneficial exercise which a pregnant woman can take. Driving in a comfortable carriage over good roads is also useful in this condition. Injurious exertion is going up and down steep stairs, lifting considerable weights, reaching high above the head for some time, using a treadle, as in running a sewing-machine, or any exercise which tends to jar or shock the body. Riding a horse or a bicycle is unsafe during pregnancy. Playing golf should be done with great caution only; and swimming, to those accustomed to it and who have access to still water, may be indulged in with moderation.

After pregnancy reaches the seventh or eighth month, exercise is a necessity. Walking

and going about the house performing the ordinary household duties should be freely carried out, as they serve a useful purpose in strengthening the mother's muscles and in bringing the child downward into the birth-canal. Confinement can be made somewhat easier and shorter if the patient takes exercise freely during the latter weeks of pregnancy.

Exercise cannot be taken with comfort unless the patient is suitably dressed and wears easy and comfortable shoes. She will be obliged to adjust her clothing if she is to take exercise in any form.

Sleep.

The patient needs an abundance of sleep during pregnancy. Occasionally cases are seen in which pregnancy seems to prevent sleep; but when such is the case, the physician must be consulted at once. Before pregnancy is sufficiently advanced to have fœtal movements develop actively, the patient usually rests without difficulty. As pregnancy advances, many patients require an increased supply of fresh air during the night. If this be supplied, sleep will often follow. With those who cannot sleep during the entire night, opportunity must be taken during the day to

obtain sleep. If the patient's digestion is poor, it will often be much improved if she can sleep just before a meal.

Baths and Bathing.

It is of paramount importance that the patient's skin be kept freely active during pregnancy. In addition to cleanliness, baths frequently aid in relieving nervous irritability and in securing sleep. During pregnancy, baths should be neither hot nor cold. A cool sponge bath in the morning and a warm full bath in a tub at night are most useful during this time. The warm bath at night often aids in procuring sleep and adds greatly to the patient's comfort. If the action of the skin is deficient, a sponge bath with cool salt-water in the morning is often useful. In cases where patients are annoyed by itching and burning, or by eruptions upon the skin, medicated baths are often prescribed by physicians.

Constipation.

Many patients suffer greatly from constipation during pregnancy. In some this is but an exaggeration of a usual condition. In others constipation becomes pronounced during pregnancy.

This condition may be overcome, in almost all cases, by a well-selected diet and by the use of water. There is no drug which can be taken during the entire pregnancy without losing its effect and becoming in a measure injurious to the patient. A diet which contains an abundance of ripe fruit, stewed dried peaches, stewed apples, preserved pears, or stewed prunes, with oatmeal, cracked wheat, hominy, vegetables in season, and a considerable quantity of fat in the shape of cream or butter, tends to avoid constipation. In addition, water should be taken in abundance early in the morning. A diet which favors constipation contains tea and coffee in abundance, meat in great quantity, fried dishes, sweets, potatoes, peas, and beans, highly-spiced dishes, and but little water.

Sometimes the most simple means will suffice to prevent constipation. A glass of cold water containing one-half teaspoonful of table-salt taken before breakfast aids many patients. A wineglassful of Hunyadi water, a teaspoonful of Rochelle salts in a glass of water, a teaspoonful of Epsom salts, or of effervescing granular citrate of magnesia, is often sufficient. Drugs for constipation should be prescribed by the physician only, as each case demands

especial study and no one drug is suitable for all.

In addition to a proper diet and the use of simple remedies, exercise during the latter part of pregnancy is essential in avoiding constipation. Bathing greatly assists in this also.

The Teeth.

There is a distinct tendency to decay of the teeth during pregnancy. Toothache and neuralgia caused by decayed teeth sometimes occasion great suffering. The pregnant patient is not, however, able to bear prolonged dental operations or to suffer severe pain. During early pregnancy the patient's dentist should inspect her teeth, and he should be informed of her condition and govern his treatment accordingly. Dentists can supply temporary fillings and use remedies which stop toothache and decay until the pregnancy is over, when permanent fillings can be introduced. If the patient suffers from her teeth, the dentist should call upon her at her house and give her relief. No case of neuralgia in the face or head should be allowed to go on during pregnancy without consultation with a dentist. In a large proportion of these cases, the cause lies in the mouth or teeth and can readily be removed.

The Skin.

Annoying and unsightly eruptions and discolorations of the skin are frequently present during pregnancy. A dirty brownish discoloration sometimes spreads over the forehead and face, greatly disfiguring the patient; itching and burning sensations occur in various portions of the body; sometimes blotches and pimples are greatly annoying.

The brownish discoloration of the face, and sometimes of other parts of the body, cannot be removed in most cases before the termination of pregnancy. It is not a permanent thing, and does not usually itch or burn. Many eruptions are remedied by the adoption of a suitable diet and the avoidance of constipation. Others require local treatment prescribed by the physician. In cases of obstinate burning and itching, the physician will examine the action of the kidneys and other excretory organs and study the patient thoroughly to ascertain the cause. When this is found, the patient can usually be relieved. Eruptions and abnormal sensations in the skin are valuable indications of the general state of health, and should be reported to the physician whenever they occur.

Nervous Disturbances.

Pregnancy often causes distressing disturbances of the nervous system. Headache, neuralgia, itching and burning of the skin, perversions of appetite, profound mental depression, and occasionally perversions in the mind or affections of the patient may become very distressing. Great increase in the secretion of saliva and the formation of a large quantity of mucus in the mouth are also observed in some cases of pregnancy. It was formerly supposed that these conditions were inevitable; but a better knowledge has taught us that there is in most cases a distinct cause for these conditions, and that this cause can readily be removed. The patient should report such symptoms promptly to her physician; or if she is not aware of them, her friends who notice them should report them. It is unnatural for a pregnant patient to be profoundly melancholy, depressed, and apprehensive. She should not suffer from severe neuralgia, nor should she have an appetite for indigestible and extraordinary articles of food. She will not go on healthfully through pregnancy if such conditions exist, and she cannot expect to have a healthy and sound child.

Accordingly, such symptoms must be reported promptly, and active treatment instituted, when the patient will be cured or greatly relieved.

Medical Advice During Pregnancy.

In view of what has been said, it cannot seem unreasonable that patients need medical care during pregnancy. In many cases life can be saved, danger at confinement anticipated and avoided, suffering prevented, and health maintained if the patient receives intelligent care during pregnancy. Patients should report to a physician so soon as pregnancy is suspected. If the condition be not present, but if the health be deranged, then treatment is needed to restore health. If pregnancy is present, care should be taken to avoid abortion and to keep the patient in good condition. It is often stated that child-bearing is a natural function and needs no interference and no supervision. This is only true in physiologically perfect individuals. Even among animals, who are supposed to be perfectly natural in their lives, complications arise during pregnancy and parturition, resulting in injury and in death. Among human beings, whose lives are constantly changed by their

environment, physiologically perfect individuals are almost never seen. Advances in medical science, however, constantly increase the length of human life and lessen disease. The pregnant woman in common with other patients should enjoy these benefits.

CHAPTER III.

THE UNBORN CHILD.

Its Shape and Development.

THE unborn child is nourished at first by the absorption of nutritious matter contained within the sac which envelops the embryo. This sac has upon its outer surface shaggy projections, by which it adheres to the wall of the womb. Later on over an area of the sac these projections form the after-birth, or placenta, which remains attached to the wall of the womb. The umbilical cord develops, which passes from the placenta to the navel of the child, and through which blood passes. The child remains enclosed in a bag of membrane containing a fluid like water, which permits the child to move freely. Should the um-

bilical cord become occluded by wrapping about the child or by pressure, the child would perish, like a diver whose air-tube might become cut off while he was working below the surface of the water. The oxygen of the mother's blood passes through the blood-vessels of the placenta to the blood contained in the umbilical cord, and in this way the child obtains oxygen and lives. Occluding the cord asphyxiates the child. The mother thus breathes for two and nourishes the child by the absorption of nutritious material from her blood into that of her offspring. The child does not breathe in the womb, because it obtains oxygen through the umbilical cord. When birth occurs, and the child is expelled into the world, and the cord is tied, breathing begins.

The first movements of the child are usually felt about the fourth or fifth month. They are said to resemble the sensation given by a young bird held within the closed hand. In some cases the patient is frightened when movements are first felt. As the child grows, they become excessive, and so strong as to interfere with the patient's sleep. The more vigorous the child the stronger its movements will be.

FIG. 1.

Incubator containing a prematurely born infant. The child has been bandaged with cotton, applied with cheesecloth bandages, instead of the usual dress.

FIG. 2.

Incubator improvised with clothes-basket, blankets, and hot-water cans.

A child is said to be viable when it can live outside the mother's body. The youngest child known to have survived was born twenty-six weeks after conception. It is not uncommon for seven months' children to live and to become as strong as those born at full term. There is no truth in the superstition that a seven months' child is more apt to live than one born at eight months. The older the child the better its chance for survival. (Figs. 1 and 2.)

The child begins to assume human shape very early in pregnancy, and is fully formed by the fifth or sixth month. It increases in weight steadily until the termination of pregnancy; male children usually weigh from seven to eight pounds, and female children from six and a half to seven and a half pounds. At birth a healthy child is twenty inches long, plump and well nourished, breaths easily, cries vigorously, and can grasp the mother's nipple and draw well upon the breast.

The Determination of Sex.

It is impossible to accurately determine before birth or to influence by any treatment during pregnancy the sex of the child. A shrewd guess may be made regarding sex by closely observing the beat of the fœtal heart;

but this is scarcely more than a guess, and cannot be relied upon for definite information.

Transmitted Traits and Resemblances.

The physical and mental traits of parents and ancestors are conveyed to children and descendants. It is a matter of common observation that daughters often resemble the father and sons the mother. Physical and mental traits may skip a generation, appearing in grandchildren. A physical peculiarity in the contour of the body may be transmitted through a long line. The tendency to produce twins and triplets is also transmitted.

Not only are physical traits and mental peculiarities transmitted, but diseases of the nervous system, and especially vicious habits, are conveyed from parents to children. This makes the responsibility of parents very great, and in some cases marriage should be avoided because of some tendency which may be transmitted.

A Healthy Development of the Unborn Child.

The question has long been asked, "What can be done to secure a healthful physical development in the unborn child?" Observation and experiment have proved that in human

beings and in animals, if the mother be subjected to physical and mental disturbance and interference, even though she be not severely injured, deformity and imperfect development in her offspring will result. Among the poor who work in injurious places, in the fumes of chemicals, or in tobacco-factories, the blighting effects of these unfavorable conditions are seen upon their offspring. Lack of nourishing food and hard work make the children of the very poor puny and ill-nourished. Syphilis and drunkenness cause the birth of miserable beings, whose lives are a curse to themselves and to others. The avoidance of blows, falls, jars, strains, malnutrition, disease, and alcoholism is necessary to secure a good physical development of the child. The nutrition of the mother must be as perfect as possible.

A Healthy Nervous System for the Child.

While it is most desirable that the child should have a sound and healthy body, it is quite as important that it should be born with sound and healthy nerves and a normal brain. Here the physical is the basis of the mental. A child born of sound parents and well nourished before birth has an enormous advantage.

There are certain conditions of the nervous

system, however, which do not amount to positive disease, but which give distress to the individual during life. Those known as nervousness, excessive irritability, and unstability of the nervous system are not infrequently seen in children, and with many will persist throughout life. Such individuals are unduly sensitive, irritable, quick-tempered, hard to please, restless, unstable, and in adult life are often spoken of as "impossible persons." In many cases this is a direct inheritance from parents or grandparents; in others it arises from the fact that during pregnancy the mother failed to have the quiet which is necessary for this condition. A long and tedious journey occupying several months of the period of pregnancy, free indulgence in society observances, overtax in any occupation drawing heavily upon the nervous system, profound grief or emotion persisting during pregnancy, or a great sorrow coming upon the patient—any one of these may produce such a condition in the unborn child. In proportion as the mother recognizes the situation, she can often by mental control obviate the danger. She can order her life so as to secure quiet and repose during her pregnancy. If sorrows come, she can bear them with the hope that

the birth of the child will bring a new and in some way compensating happiness. While these conditions cannot always be avoided, they can in many cases be obviated or controlled.

It was the belief of the Greeks that by surrounding herself with objects of beauty, by filling her mind with pleasing thoughts, by living in contact with nature in its most beautiful forms, the mother could influence the mind and body of her unborn child. This is more than imagination. The history of the Greek race attests its truth, and modern observation at the other extreme of the scale amid the poor comes to the same conclusion from the darker side of the picture.

CHAPTER IV.

HOW SHALL THE PRINCIPAL DANGERS OF PREGNANCY BE AVOIDED?

Abortion or Miscarriage.

THE term "abortion" is sometimes associated with a criminal action where pregnancy is purposely interrupted. For this reason many do not speak of abortion, but of miscarriage.

The signs and symptoms of miscarriage are pain low in the back and low in the front of the abdomen, and a discharge of blood or bloody mucus from the vagina. The symptoms are essentially those of returning menstruation. When these begin, the patient's physician should be promptly notified.

To guard against abortion, or miscarriage, excessive fatigue, exposure to great heat or cold, violent exercise, great excitement, injuries, blows, falls, and accidents should if possible be avoided. The patient's dress should be arranged in the manner suggested. When the first symptoms appear, the patient should immediately lie down and remain recumbent until she has been examined by her physician. Should hemorrhage be considerable, the napkins used should be saved for the physician's inspection. The patient's head should be low, and she should remain absolutely quiet.

While the patient is naturally alarmed at symptoms of abortion, she may remember that bleeding is rarely dangerous in these cases, and that if she will keep perfectly quiet, the abortion may be checked. It is of the utmost importance that the abortion be arrested, if possible, because damage to the patient's health may result if the process goes on.

The Toxaemia of Pregnancy.

As the mother nourishes herself and the unborn child, she produces within her body an increased quantity of waste material. These substances are poisonous, and must be removed from the body if life and health are to continue. This is accomplished by the kidneys, the bowels, the liver, the skin, and the lungs. Hence the necessity that the patient should take plenty of water that the kidneys may act, that she should avoid constipation, that digestion be properly performed by the liver, that the skin be kept active, and that the patient have fresh air. When the waste of the body is not properly disposed of, a gradual poisoning results, which may go on to convulsions and to serious consequences for mother and child.

The patient should report to her physician the presence of constipation, diminished action of the kidneys, biliousness and indigestion, swelling of the face or limbs, failure of the skin to act, headache, nausea, and disturbance in her vision. Fortunately, this condition usually develops slowly, and if the patient promptly summons medical aid she can be relieved.

To assist the physician in preventing the

accumulation of these poisons, the patient must regulate her diet in accordance with his advice. Milk, fruit, and bread constitute an almost ideal diet for the pregnant condition. As each case demands individual study, the physician will give each patient such directions as are needed. Patients sometimes imagine that they are being starved because they do not obtain meat and rich food. This is an unfortunate mistake which has done much to favor the occurrence of disease. It is not what the patient eats, but what she digests and assimilates, which does her and the child good. She need not fear that the child will suffer because her diet is made a simple one. On the contrary, experiment has shown that the child is oftener better nourished and better developed when the mother's diet is restricted than when she indulges freely. Labor is often easier for the mother when she has followed a restricted diet, because the child is better adapted to pass through the bony portions of the birth-canal.

The patient can aid the physician in preventing the toxæmia of pregnancy, not only by following his directions as to diet, but by sending regularly specimens of urine for examination. That passed first in the morning is

usually selected. At least four ounces should be sent as often as he may direct. He may also request that the quantity passed daily should be measured, and this may be a most important matter. By following his prescribed diet, by sending specimens for examination, and by reporting promptly any variation in the general health, the patient will aid greatly in this very important matter.

Symptoms to be Invariably Reported to the Physician.

For the safety of mother and child, the patient should report at once symptoms of any derangement in her general health. She should be especially careful to report swelling of the extremities or of the face, dimness of vision, black specks or flashes of light seen before the eyes, headache above the eyes, and attacks of faintness. Should a discharge of blood occur resembling menstruation, this must be at once reported. Should pain in the lower part of the abdomen, followed by faintness, attack the patient, she should keep absolutely quiet and her physician be at once informed. It is better to report some unimportant symptoms than to fail to detect a condition which requires attention.

Rapid increase in the size of the abdomen is a symptom of importance as regards both mother and child. Very active and violent movements are indications which require investigation. The cessation of the child's motion should be at once reported. A noticeable projection in any part of the abdomen, with unusual movements of the child, requires attention. Where abnormalities arise concerning the child's position, it is usually possible to rectify them if the physician be informed upon the first symptom.

CHAPTER V.

THE END OF PREGNANCY.

We have already spoken of the methods usually employed to compute the duration of pregnancy. The physician's examination is far more reliable than any computation based upon the history of menstruation. As pregnancy draws to its close, symptoms arise which usually give warning of approaching labor. If it be the patient's first pregnancy, the abdomen grows smaller. At its upper

portion its circumference is much less, the patient breathes more easily, and grows smaller instead of larger. This is soon followed by a sensation of weight or heaviness low in the body, by frequent desires to empty the bladder, and often by irritation about the rectum. Slight backache and slight pain in the back frequently occur. Sometimes the patient is slightly nauseated, and in some cases pain is experienced along the inner side of the thighs.

The Nurse.

As early as possible the patient should have selected her nurse. This choice should not be made without consulting her physician, for doctors have better opportunities for learning the capabilities of nurses than have patients. On the other hand, the statement of a friend to whom a nurse has given satisfaction should not be ignored; and if the nurse's professional qualifications equal her agreeable qualities, so much the better. Obstetric nursing is a specialty, and cannot be successfully followed by the average nurse. An obstetric nurse cannot safely take cases of contagious disease. She requires especial experience and education; and many hospitals which graduate nurses have no maternity wards and

give no competent education in obstetrics. Hence, the fact that a woman is a trained nurse is no more evidence that she is qualified in obstetric nursing than is the fact that a physician holds a general diploma in medicine evidence that he is skilled in obstetrics or surgery. The obstetric nurse must be young enough to be strong and active, and have sufficient character to be self-possessed and thoroughly trustworthy. Above all, the obstetric nurse must have been thoroughly drilled in the practice of asepsis and antisepsis; and failure in this cannot be made up by agreeable qualities, or age, or any other characteristic. As obstetric nursing requires especial skill, and is often very taxing to the nurse's strength, good prices must be paid for experienced obstetric nurses.

The Room.

When the patient accepts her nurse, it is the duty of the nurse to see that preparations are made for the approaching confinement. She will suggest the selection of a suitable room for the patient's confinement and recovery. Such a room should be quiet, well ventilated, exposed to sunshine, and on the same floor with the bath-room. No plumbing should open in the room. If possible it should

have an open fireplace and should be devoid of carpets and hangings. Clean rugs may be used. Frail and expensive furniture is not desirable, as sometimes medicines and antiseptic solutions may be spilled upon highly polished furniture and the polish ruined. Useless furniture should be removed from the room, and a cot-bed should be available for the nurse's use immediately after the patient's confinement. A large screen should also be available.

The Bed.

A narrow, high bed, with a firm and comfortable mattress, is most convenient for patient and nurse. Nothing is more trying or increases the difficulty of properly caring for mother and child than a low, wide, heavy bed with elaborate furnishings. An abundant supply of linen should be available, and such may be old linen which can be spared without much loss. Light blankets are desirable, and an abundant supply of small pillows.

Medical Supplies.

The physician will furnish his patient with a list of medical supplies which should be in readiness. Pharmacists often make it a point to fill out such lists and to procure all the

articles needed, sending them to the patient in one package, which may not be opened until the supplies are needed. Each physician has his own list, including the articles which he and his nurse consider necessary. Such supplies include antiseptics, stimulants, anæsthetics, surgical dressings, ergot, nail-brushes, catheter, medicine-dropper, and any other articles which the physician may personally desire. The surgical dressings purchased are usually furnished in sealed glass jars, and should not be opened until needed. Some of the antiseptics used are poisonous, and hence should not be left where children can get them or where servants ignorant of their properties might be tempted to use them.

Dressings.

An obstetric patient is practically a surgical patient, and her safety requires the observance of the same principles of asepsis and antisepsis employed in modern surgery. She must have an abundance of aseptic or antiseptic dressings as ordered by her physician. These are obtained in one of two ways: If moderate expense is not an item, these dressings may be purchased in sealed glass jars from druggists or instrument-makers. The physician's

list of supplies includes only sufficient of these prepared dressings for the confinement itself. Cheaper dressings, which are thoroughly efficient, may be made by a skilled obstetric nurse from inexpensive cheese-cloth and cotton. These must be sterilized by heat and soaked in antiseptic solutions in addition. The obstetric nurse may prepare these dressings at the patient's house before her confinement, putting them up in packages in sterile towels, and having them in readiness for use after confinement. The obstetric nurse should be compensated for the preparation of these dressings, unless the work is done when she is already in the patient's house in charge of the case.

In addition to the absorptive dressings, bandages for the breasts and for the abdomen will be needed. These the nurse will prepare in accordance with the physician's directions. Rubber sheeting to fit the bed will be selected by the nurse, and an abundance of old sheets will be required in connection with the rubber sheeting. Clean basins and pitchers will be required, with an abundance of towels. These need not be of an expensive variety, so long as they have been repeatedly boiled and are thoroughly clean.

Dangerous Articles.

Articles which should never be used in an obstetric case are syringes which have been previously used, old toilet sponges, napkins which have been worn during menstruation, bedding which has been used during a previous illness without disinfection, catheters and douche tubes which have been used. Blood-poisoning may follow the employment of any of these articles.

CHAPTER VI.

LABOR.

By labor, or confinement, is meant the expulsion of the child from the uterus. This process comprises three different steps or procedures. First, the womb must open sufficiently to permit the child to escape; second, the child must be born; and, last, the afterbirth, the umbilical cord, and the membranes must be expelled.

During the first portion of labor the patient may be annoyed by nagging pains in the lower portion of the abdomen, and apparently no

progress may be made. The opening of the womb will go on, however, and finally the bag of membrane containing the water in which the child floats will protrude through the mouth of the womb and completely open the uterus. When this is accomplished, the membranes rupture, and some of the water escapes. Patients are sometimes frightened by the sudden escape of a considerable quantity of water; but when they are told why this happens, they have no cause for alarm.

After the membranes rupture, the contractions of the womb become stronger, and the child is gradually expelled. After the birth of the child, pains cease for about a half-hour, and then return in much diminished strength, when the after-birth is extruded.

There is no definite limit to the length of labor or confinement, and many circumstances tend to vary its duration. A spontaneous labor is one in which the mother expels the child without special aid. When this is not possible, the child may be removed by some obstetric operation.

Preparations for Labor.

The nurse, if not already in the house, should be summoned as soon as labor pains begin.

She will send for the physician when the proper time arrives. The nurse will require a plentiful supply of hot water. Whisky or brandy should be on hand, and the patient may need broth, soup, or some other liquid food. When the nurse arrives, she will properly dress the patient, prepare her bed, give an injection to move the bowels, and make suitable preparations for the labor.

Essentials to the Conduct of Labor.

Modern medical science surrounds the patient during labor with the means for the protection of her life and that of the child, and with agents to lessen suffering. Each patient in labor should enjoy the advantages of aseptic precautions, and, in addition, antiseptic treatment, if the physician deems it necessary. The poorest patients in hospitals are delivered under aseptic precautions, and even the poor in miserable hovels are attended by physicians who try to practise asepsis. In her own home the patient should certainly enjoy the benefits of asepsis and antisepsis during labor.

It is usually possible at some time during labor to relieve the patient by an anæsthetic. The necessity for its use should be left entirely to the judgment of the physician. Im-

properly employed, anæsthetics prolong labor and expose the patient to danger. Rightly used, they spare suffering and maintain strength. In some cases the condition of the patient may forbid their use, or it may be wise to avoid employing them in the interests of the child and the mother as well; but such are the exception, and not the rule. There are certain drugs employed in modern obstetric practice to prevent hemorrhage. Ergot is most frequently used, and generally with success. Its taste is not extremely unpleasant, and the dose of the preparation usually given is one teaspoonful. Other remedies are chosen by the physician in accordance with each case.

CHAPTER VII.

OBSTETRIC OPERATIONS.

SURGERY in modern times has greatly relieved suffering and in many cases saved life. In other cases it prolongs life and preserves the patient's strength. Under aseptic precautions, surgical operations are among the

safest methods of treatment employed. So obstetric operations which remove the child from the mother's body, if done under aseptic precautions and with the same care which marks the modern surgical operation, save lives, relieve suffering, and maintain health. When a patient is told that it will be necessary to terminate her labor by operation, she should realize that this operation, if done in a clean manner, as modern surgery is done, will not only tend to preserve her life and that of her child, but also spare suffering and secure good health. Careful physicians obtain extra help for obstetric operations, just as surgeons have a physician to anæsthetize and nurses to assist. The same precautions regarding the sterilization of instruments and dressings and cleanliness of hands are observed in obstetric operations which are successful in modern surgery.

Operations which Remove the Child.

When the mother fails to properly expel the child and it is best in her interest and that of the infant to remove it, some form of operation is practised. An anæsthetic is given and the patient delivered. The child is often cared for before the mother wakes from the anæs-

thetic, so that she may hear it cry and have it shown to her as soon as she is conscious.

Operations for the Repair of Injuries.

In cases where the mother fails to deliver herself, it is often because some lack of development is present which makes the birth of the child without injury to the mother impossible. In many cases in which the mother expels the child herself laceration occurs. Obstetric operations do not cause laceration, but often prevent serious injury. In cases in which laceration occurs, unless some condition is present which makes repair unwise, it is the duty of the physician to repair the laceration. Patients must understand that laceration is often inevitable, but that under most conditions it can be almost immediately repaired. When a physician tells a patient that it is necessary to close a laceration, she must understand that she is receiving careful attention, and not that the physician is to be blamed because the laceration has occurred. In most cases lacerations are closed under anæsthesia. It is sometimes necessary to omit the anæsthetic and to ask the patient to bear some pain for a few moments. When done in a throughly clean and careful manner, these operations prevent

ill health, and spare the patient the necessity of undergoing an operation after she recovers from childbirth.

CHAPTER VIII.

THE PUERPERAL OR LYING-IN PERIOD.

By this is understood the time occupied in the patient's recovery from confinement. As the mother is during most of the time in bed, it is often spoken of as the lying-in period. It has no definite duration, because it varies with the patient's strength and vigor and with her freedom from complications which may retard her recovery. From four to six weeks is the usual and normal duration of this period.

Essentials for Good Recovery.

For a patient to make a good recovery from childbirth, she must have sufficient rest. Immediately after labor, she needs absolute repose for a number of hours. The patient is naturally tired and exhausted; and if she does well, her inclination is to sleep. This inclination should not be interfered with, but

the patient should be allowed to sleep until she feels somewhat rested. She should not be disturbed for such a pretext as to see her family or friends or to receive congratulations over the birth of the child. This first rest is most important, as it prevents the patient from having complications which might become of a serious nature. After the first few hours the patient's rest should still be carefully guarded. The nursing of the child may be so arranged that the mother will have regular and undisturbed rest and the child be trained into regular habits. So far as possible household cares, anxieties, and disturbances of all sorts should be kept from the patient; and she should have mental as well as physical rest.

Strict cleanliness, both general and surgical, is essential for the good recovery of the patient. The lochial discharge coming from the birth-canal should be absorbed by antiseptic dressings, and these should be changed sufficiently often to keep the patient clean. At each changing the nurse, under antiseptic precautions, will cleanse the patient thoroughly as the doctor may direct. Vaginal douches should be given by the doctor's order only during the puerperal period. The insertion of a douche tube may be followed by serious

results, unless every antiseptic precaution be taken. The nurse will cleanse her hands carefully before attending to the patient, and will see that soiled dressings are burned as soon as possible after they are removed. Clean and antiseptic dressings should be used to protect the nipples from contact with clothing, and thus prevent injury and infection. The lying-in patient requires clean and surgical dressings over the breasts and about the lower portion of the body. These are retained in place by bandages, which, if properly applied, do not increase the patient's discomfort. Patients should co-operate with the nurse in every way in maintaining cleanliness, and thus by tact and good management she can secure the burning of soiled dressings without seriously interfering with the servants of the household.

Proper nourishment is also essential in securing a good recovery from labor. For her own sake, as well as for the child's, the mother must be contented with simple and easily-digested food. While lying in bed she will not assimilate heavy foods, such as meat and rich and made dishes. Her child will not be well nourished if she takes such articles. Her food must be limited to the most easily-digested and

nutritious articles, and these will be ordered by her physician. Among the foods especially employed with success during the puerperal period are milk, with cracker, or with lime-water, or diluted with Vichy or Apollinaris or soda-water, or made into junket, milk-puddings, custards, or peptonized. Chicken, mutton, veal, and clam broths, purées, gruels, cocoa, milk-toast, light puddings, blanc-mange, and charlotte russe are also given. Stewed fresh peaches, or stewed fresh apples, baked apples, stewed dried fruits, preserved pears, and stewed prunes are often used. When the patient is some days advanced in recovery, she may be given once daily a small quantity of easily-digested meat, such as chicken, lamb, sweetbread, or a soft egg. In season, oysters are often very acceptable. When vegetables are added to the diet, fine spinach and rice are usually the first given. If the patient has been so accustomed to tea and coffee that she cannot do without them, they may be used in small quantities only, but a lying-in patient does not need them. Alcohol is almost never required in this condition. It is very essential that the patient take an abundance of water, and this may be any form of pure water which she prefers. Food should be taken at regular

intervals, and a sufficiently varied diet should be given to maintain appetite. If possible, the patient should not be told what she is to take, but the food should be prepared and brought to her in the most appetizing manner possible.

Nutrition cannot go on properly without especial attention to the movements of the bowels. Within a short time after labor the patient's bowels must be very thoroughly moved. After that, daily movements must occur; the physician will prescribe simple medicines, and enemata will often be given in addition. If the nurse is skilful and careful in giving such injections, they will not cause great discomfort to the patient. Many patients suffer great annoyance because they cannot empty the bladder and rectum while lying down. A little patience will usually overcome this difficulty; and if recovery goes on well, the physician will allow his patient to use a commode as soon as possible.

Lactation.

Milk is usually present in the breasts during the latter weeks of pregnancy. During pregnancy the breasts and nipples should be inspected, and if the nipples are depressed or

sunken, they should be drawn out by the thumb and finger. The nipples should be thoroughly but gently cleansed with castile soap and warm water once daily; and if there is a disposition to cracks or fissures of the nipple, the physician will give the patient a suitable application for this purpose. Patients should not use miscellaneous prescriptions which their friends or which nurses are apt to advise. Patients should avoid the use of alcoholic preparations and astringents, as these make the nipple more liable to crack and injury. The formation of milk begins in the breasts on the second or third day after the delivery of the child. Sometimes the breasts fill very suddenly, and, becoming greatly swollen, cause much suffering. In other cases they become distended so gradually as to cause little distress. If the breasts are greatly distended, the patient may feel sore in the arm pits, and occasionally the sides of the neck and face swell in addition. When the milk begins to run freely from the breasts and the child to nurse, the secretion greatly lessens in quantity until sufficient milk, but no more, is formed for the use of the child.

When and How Shall the Child Nurse?

The child shall nurse for the first time after the mother has had a good sleep and wakes refreshed. It is sometimes necessary to put the child to the breast at once. During the first twenty-four hours the child usually nurses every four hours, during the second twenty-four hours every three hours, and after that every two and a half to three hours. Occasionally the child nurses every two hours during the greater part of the time. Nursing should be entirely suspended for from six to eight hours at night. The mother needs this rest and the child requires uninterrupted sleep. It is usual to have the child nurse at regular intervals from six or seven in the morning until ten or eleven at night. After the last nursing, it should not be nursed more than twice in exceptional cases, usually but once, and as soon as possible the child should not nurse for six or eight hours. The constant tendency is to have children nurse too often, thus disturbing the mother and overburdening the child's stomach. If strict regularity in the child's nursing be observed, it will form regular habits, which have much to do with good nutrition. The danger is that the mother

will think the child is hungry whenever it frets or cries. The child will usually take the breast as often as it is offered. Too frequent nursing gives the child indigestion and makes it very fretful, and so a disturbing cause is constantly present. For the child to properly nurse, it must be supported in an easy posture upon the mother's arm and the breast so turned that the nipple will fall readily into the child's mouth. From fifteen to twenty minutes is necessary, and the effort should be made to keep the child awake during this time when nursing. If the milk comes so fast as to embarrass the child, the mother may compress the nipple gently between two fingers and thus hinder somewhat the flow of milk. The child should not be allowed to keep the nipple in its mouth when it is not nursing, nor should it be allowed to lie asleep with the nipple in its mouth.

Care of the Breasts.

Unless the breasts are properly cared for the nipples may become cracked and sore, the breasts caked, and much suffering result. To keep the nipples sound, the nurse will thoroughly cleanse them before and after the child nurses, and apply antiseptic solutions which will not irritate, but which will prevent the

growth of bacteria. The use of antiseptic dressings upon the nipples does much to prevent cracking and inflammation. The nipples should not be touched by hands that have not been made thoroughly and surgically clean, and should be protected from contact with the patient's clothing. In order to preserve the nipples in a sound condition, they are covered by sterile or antiseptic dressings, and the breasts are supported and the dressings kept in place by the application of suitable bandages. These may be modelled after a waist having supporting pieces over the shoulders attached to the edges of the bandage, which is pinned about the chest. Others prefer a loop or figure-of-eight bandage going underneath the breast and over the opposite shoulder. It is not essential what form of dressing is applied, so long as the indications are fairly met.

Caked Breasts.

By the term "caked breasts" is described a condition in which the breasts become overdistended with milk and are hard and painful. This condition requires prompt attention, and, if taken in hand at once, can in almost all cases be relieved without delay. It arises

from the very rapid and free secretion of milk which accumulates in the breasts consolidating or stretching the ducts in which it is contained. If the milk can flow out freely, the distention is gradually lessened.

This condition is one which requires intelligent and skilful treatment, and is one in which much harm may be done if the patient does not receive proper treatment. As the breasts are sensitive and delicate organs, bruising or roughness in their treatment will not only cause suffering, but is almost inevitably followed by serious consequences. Hence the treatment must be conducted in a skilful manner. The doctor will order what he wishes done in these cases, and the nurse understanding his directions will relieve the patient as speedily as possible. If the distension be extreme, the patient cannot escape suffering, and often the first efforts made to secure a free flow of milk will cause pain; but if she will have patience for a short time, she will be permanently relieved.

Methods of treatment employed in these cases consist in the application of heat and occasionally of cold. Heat is applied in the form of flannel wrung out of hot water, and sometimes sprinkled with turpentine, alcohol,

or camphor, and placed upon the breasts. Over this is spread oiled silk or dry flannel. The breasts are also massaged to relieve overdistention. This requires skill and experience, and, if badly done, will cause great pain and injure the breast. The hands of the masseuse must be surgically clean and thoroughly warm. Sterile olive oil is usually employed. Having annointed her hands with this, the masseuse raises the breast gently, and beginning at the outer border, rubs towards the nipple. A skilful nurse will detect those parts of the breast where distention is greatest, and will do much to relieve the patient by this manipulation. No one but a skilful and experienced nurse can do this successfully. The application of the breast-pump to withdraw milk is a method of treatment also employed. The breast-pump comprises a glass bell, which is placed over the nipple and connected with a rubber bulb. By compressing the bulb before applying the breast-pump, a vacuum is created, and atmospheric pressure forces the milk out at the nipple. The breast-pump must be used with skill and judgment, as its careless and improper employment may cause pain and do damage. The nursing of the child is the natural relief for an overdistended breast.

When the tension is so great that the child cannot start the milk, the nurse will lessen the tension by some method of treatment, and then apply the child to the breast. So soon as the child begins to nurse, the tension will be relieved. When the child is old enough to nurse regularly and freely, it will relieve the tension in this way. A skilful nurse, with the co-operation of her patient, will usually prevent serious complications on the part of the breasts. The patient, however, must aid in every way, as without her co-operation nothing can be accomplished.

Sore Nipples.

Sore nipples usually arise from cracks or fissures caused by the bruising of the nipple, by the biting of the child, or by some injury to the nipple while bathing or rubbing. Such cracks and fissures become very sore when the child nurses, and if infection enters, inflammation of the breasts and abscess may result. A crack or fissure in the nipple is an annoying complication which requires good care and close attention.

In most cases fissure is prevented by the examination of the nipples during pregnancy, and by the application of healing remedies to

prevent cracking. When fissure does occur, a nipple-shield is usually employed to protect the nipple from the child's mouth. This consists of a hollow glass cone or bell placed over the nipple, to which is attached a rubber nipple for the child to grasp. This usually gives great comfort to the mother, and in most cases can be successfully used by the child. When fissures of the nipple occur, the physician will prescribe applications of medicine to heal them. The nurse will make these under strict antiseptic precautions. Cleanliness and strict antisepsis are far more important in these cases than the application of medicine. If the nurse is not clean, or if the mother interferes with the dressings and bandages, infection may occur through the crack or fissure.

Inflammation of the Breasts.

Germs are sometimes present in the ducts of the breast before the child is born. When the breasts are engorged by milk, these germs invade the tissues and set up inflammation. Germs usually enter the breasts through the nipples, and sometimes through cracks or fissures. They cause inflammation, and in some cases this goes on to the formation of pus or abscess of the breast. Under strict

cleanliness and good care in the prevention of engorgement, inflammation of the breast is rare. It may, however, happen in spite of all known precautions. When pus is formed and a definite abscess is present, the abscess must be opened, the pus allowed to discharge, and the abscess cavity cleaned.

CHAPTER IX.

COMPLETE RECOVERY FROM CHILDBIRTH.

For a patient to make a complete recovery from labor she must have escaped septic infection or have recovered from such infection. Lacerations of the birth-canal must have healed either with or without the application of stitches. The patient must be thoroughly and well nourished, and is usually in better condition than before the birth of the child. She must have had sufficient rest for the nervous system to be in a perfectly well-controlled condition. The womb and birth-canal must have contracted to nearly its normal shape and size, a process known as involution. This is only possible when the other factors in the problem have been satis-

factorily solved. While physically the patient's stature and shape can never be exactly the same as before childbirth, still she should recover free from disease of the womb and its appendages and be in good general condition.

Sitting Up.

By assuming various postures while in bed the patient should aid somewhat in her recovery. She should not lie upon the back all of the time, but should turn upon the sides; and, if she desires, may turn upon the abdomen. She should be slowly propped up in bed as the doctor orders; and when the womb is sufficiently contracted and her general condition is good, she should gradually be allowed to sit up, and finally to get out of bed. The belief that patients should sit up on the tenth day has no basis of fact. One patient may be able to sit up on the tenth day and another on the twentieth, and each case must be decided on its own merits by the physician in attendance. He will examine the patient from time to time and thus determine when she can sit up.

Getting Back the Figure.

Patients are often anxious to know regarding the getting back of the figure. To under-

stand this we must know what is meant by the term "figure." Many women who have worn corsets for some time mean by the term "figure" the same degree of compression which they are accustomed to make by the corset. We have never met a patient who acknowledged that she had worn a corset tightly, so that in our experience alterations in the shape cannot come from wearing tight corsets, but simply from the corset itself. When the patient asks about getting back the figure, she usually means when can she wear the same corset, laced in the same way, as she did before the child was born. So far as the patient's actual size is concerned, the skeleton and all parts of the body increase during pregnancy. The patient is never actually as small after pregnancy as before; and if this is a matter of vital importance, then the pregnancy has been a calamity. In the normal human figure certain proportions are present between the head and the circumference of various parts of the body. If by the term "figure" these proportions are meant, a patient can get back her figure who makes a good recovery from childbirth, who has the weak muscles brought up by massage, who does not get up too soon, who nurses the

child, if possible, and who is careful about exaggerating the figure by compressing one part of the body at the expense of another portion. The getting back of the corset figure is largely a matter of endurance, as patients vary in their ability to stand pressure and in their willingness to do so.

The patient's going down-stairs is permitted by her physician when her general condition justifies it. Going up-stairs is more injurious to the patient than going down. It may be necessary to carry her up-stairs for a few days, or to have some person stand directly behind her, and, putting the hands upon her hips, raise her body while she makes the upward step. She should not strain or pull in going up-stairs. A patient may go out so soon as her general condition permits and the weather is suitable. Usually a drive is first allowed, and then a short walk upon the level. Good air and bright sunshine should be chosen for the first outing, if the weather be cool. In hot weather the early evening is usually the best time.

CHAPTER X.

HOW LONG SHALL THE MOTHER NURSE THE CHILD?—SUCCESSFUL NURSING.

Diet.

WHEN the mother nurses the child successfully, it gains in weight from one-half to one pound each week, its digestion is good, it is satisfied with its food, and sleeps and rests normally. The mother is also in good health, her appetite, her digestion, and her strength remaining good also.

To secure this result the mother's diet must be regulated in accordance with the end in view. Milk prepared in any acceptable way, an abundance of good bread and butter, fresh vegetables in season and thoroughly cooked, ripe fruits in season,—raw, stewed, or baked, —eggs simply cooked, a moderate quantity of digestible meat, fish in season, oysters, and simple desserts should compose the diet. Water, milk, and cocoa are the best beverages. Tea has a great reputation among the poor for stimulating the flow of milk, but this rests upon no accurate testimony, and those nursing

women who drink large quantities of tea are usually in poor condition and their children are not well nourished. Some think that coffee lessens the flow of milk; but of this we have not sufficient proof. That cocoa and milk favor the formation of breast-milk there can be no doubt.

Some form of alcoholic beverage is frequently recommended by friends to women who are nursing children. Beer, ale, and porter are supposed to be especially valuable for this purpose. Our experience does not bear out this recommendation, as in many cases the attempt to use beer, ale, or porter is followed by impairment in the patient's digestion, by biliousness, and by derangement of the child's digestion as well. Malt liquors may well be substituted by an extract of malt. The best malt extracts contain but little sugar and are prepared especially to avoid overtaxing the patient's digestion. A nursing mother should avoid the use of alcohol if possible, because of its influence upon her digestion and its possible influence upon the child.

The cardinal point in selecting diet during nursing is that the mother avoid food which overtaxes her powers of digestion. Food commonly classed as rich and indigestible

should be excluded. An abundance of the best food, that which is most nutritious and digestible, is required.

Exercise.

Where a mother is usually robust and has a strong digestion, her milk may not agree with the child because it is too rich. In such a case the mother should take exercise in the open air, and by so doing she will lessen the quantity of the richer portions of the milk and make it more easily digested by the child. Any form of exercise which agrees with the patient may be chosen. She must avoid mechanical injury to the breasts and also taking a severe cold. In hot weather, if she is accustomed to sea-bathing and avoids injury by the waves, she may go into the water with great benefit.

Constipation.

If a nursing mother becomes obstinately constipated, her digestion will become disordered and her milk will not agree with the child. In selecting laxatives, some are especially disposed to cause irritation and to give the child discomfort. The simplest laxatives should be used, unless the patient's physician orders otherwise. Such laxatives as

castor oil, cascara, citrate of magnesia, and syrup of figs may usually be employed without disturbing the child. Ripe fruits in season or stewed fruits are the best laxatives, and fruit, if cooked, will rarely cause irritation in the milk or disturb the infant.

The Child's Weight.

The most reliable index of the growth and general prosperity of the child is its weight. Suitable scales should be at hand when the child is born, and it should be weighed at regular intervals. Once weekly is usually sufficient to weigh a child, although in some cases the child is weighed every two or three days. A healthy nursing infant should gain from a half ounce to an ounce each day. In some cases a healthy nursing infant has gained a pound and a half each week for several weeks after birth. The child will lose weight in many cases for the first five or six days after birth. This loss is occasioned by various causes; but as soon as the mother begins to furnish the infant fully-formed milk, the child should gain and continue so to do. The child's weight is a valuable index of the mother's success in nursing it and should never be disregarded.

Influence of Nursing Upon the Mother's Health.

When the mother can successfully nurse the child, it is far better for her so to do. She makes a better recovery from childbirth and usually a more rapid recovery. While nursing, conception rarely occurs, and this protects the mother from the strain of rapidly succeeding pregnancy. Some patients gain in weight while nursing and others lose. Those who lose often have the more abundant supply of milk. Neither gain nor loss in the mother's weight is of especial importance, provided she remains well during the time. Laying aside the interests of the child, in the mother's interest only it is far better that she should nurse her infant if possible. Many patients who cannot nurse a child completely can partially nurse it, and this is much better than abandoning nursing entirely. The child may be fed during the day in these cases and the mother nurse it at night and in the early morning. In this way the infant gets the most digestible food the last thing at night and the first in the morning, and this avoids indigestion during the night, which disturbs its sleep and that of the parents. The mother

has the day free from the care of nursing, while the continuance of lactation protects her from pregnancy and helps in securing a good recovery from childbirth. Modern methods of infant feeding are at present so successful that it is rare to find a case which cannot be assisted during lactation without disturbing the health of mother and child.

PART II.—THE CHILD.

CHAPTER I.

THE CRADLE.

MODERN ideas regarding sanitation and convenience have gone so far as to take notice of the baby's cradle. The old mahogany cradle on rockers, but a few inches above the floor, which sheltered generations of a family, is now looked upon as a curiosity. The modern mother does not sit with the cradle at her feet and by placing her foot upon it rock her child to sleep. Rocking the cradle is practised less among those who are anxious to do for infants what modern knowledge deems wise. The objection to the low wooden cradle upon rockers is that it placed the child too near the floor, where it was exposed to draughts. The rocking motion is thought by some injurious, as it tends to disturb the child rather than to lull it to sleep. The low wooden cradle could not be moved from place to place. In its stead

the bassinette has come into extensive use. Made of wicker, the bassinette stands higher than the ordinary bed, is readily moved, and is not upon rockers. Its structure permits the mother to fit to it simple hangings, which add to its beauty and make it comfortable for the child. (FIG. 3.) Many bassinettes are made in two parts,—basket and frame. The basket may be readily lifted out of its frame and carried with its contents wherever desired. The bassinette is undoubtedly the most convenient and suitable nest for the infant which has yet been devised. The simplest and cheapest bassinette is a clothes-basket. Several blankets may be put into the basket, its sides protected by a light blanket or sheet, and the child then placed in it. The basket should stand upon a low table or upon two chairs. It is not uncommon to see this use of a clothes-basket by persons of limited means, and in this way it answers every indication.

The Crib.

The modern crib, like the modern bed, is of iron or brass, enamelled or polished, and fitted with mattress, bedding, and pillows. These cribs generally have sides which let down, and are upon casters. They are suffi-

FIG. 3.

Bassinette.

ciently large to accommodate a child several years old. A railing high enough to prevent a child of eighteen months or two years from falling out is attached. This railing, with its divisions, is sometimes a source of danger. Cases have been observed where active children made their way between the spokes or bars of the railing, and, being caught in very unfavorable positions, were severely injured. The crib is not very easily moved, but it is convenient, because it serves as the child's bed for a number of years. Being of metal, it can be thoroughly cleaned and disinfected. Many cribs have canopies, fitted with curtains or mosquito-netting. Hangings may be fitted to a crib in any way to suit the taste of the mother. The mattress of the crib should be of the very best quality of hair and its pillows carefully chosen. Its bedding may vary in texture with the means and taste of the mother.

Other Receptacles for an Infant.

Improvised receptacles for the infant are sometimes amusing, and occasionally pathetic. Among the poor, the baby is not infrequently put into a wash-tub, in which has been placed an old quilt or a blanket. The baby-carriage

of the poor mother often serves night and day as a receptacle for the child.

Shall the Child Remain with the Mother?

In the interest of both mother and child it is best that the child should not be with the mother continuously. One will disturb the other, and neither will obtain necessary rest if they remain together. During the lying-in period it is best to have the child's resting-place in a room adjoining the mother's, where the nurse can attend to the child without waking or disturbing the mother. Where a separate room is not available, the child's crib may be surrounded by a large screen, thus practically making a small room for it. If the child must be kept with the mother, and there is no intelligent care-taker for the child, the mother may put the crib beside her bed, so that she can reach the child if necessary, while the child has a separate covering and resting-place. Children lying in bed with the mother have been severely injured through accident by the mother while asleep; so that it is never wise for the mother and child to sleep together.

FIG. 4.

Showing infant dressed in socks, diaper, and knitted band before long-sleeved undershirt is worn.

CHAPTER II.

THE CHILD'S CLOTHING.

FROM the traditional rabbit skin to the elaborate wardrobe for infant royalty, infants' clothing has always excited a lively interest. Fashion has influenced such garments. The desire for luxury and display has been shown in this respect as in the clothing of elders, and comfort in the sense of fitness is displayed in this particular of the infant's care as well as in greater matters. The ideal infant's clothing is the rabbit skin. The material, soft, warm, fitting the body perfectly, permitting free motion, and constantly renewed by growth, makes the best clothing. Centuries of civilization have so changed the skin of the infant that artificial protection has become a necessity.

The dress of the new-born child is modified in some particulars by the necessity for a dressing upon the umbilicus and the wearing of the diaper. (Fig. 4.) Its clothing should be more simple than that of the older child. Necessary garments should be so adjusted that they may be changed with the least disturbance to

the child and should fit the child in such a manner as to permit unrestrained motion. The dressing upon the umbilicus is kept in place by a flannel bandage, which should extend over the entire abdomen. After the dressing of the umbilicus is discarded, a knitted band should be worn. The diaper of the child covers the bottom of its body, extends one-third of the way upon its thighs, and is pinned in front to the flannel bandage or knitted band. (Figs. 5 and 6.) The feet are covered by knitted socks of either wool or wool and silk. At night a high-necked and long-sleeved flannel night-gown is worn (Fig. 7); and in the daytime for the first few weeks a similar gown may be worn, covered with a simple white muslin slip; but the gown should be changed at night, if circumstances permit, so that one should not be worn through the twenty-four hours. For the daytime the new-born infant requires a light woollen shirt, with sleeves reaching to its wrists. Over this a slip of light woollen material, fastened on the shoulders and without sleeves, should be worn. (Figs. 8 and 9.) A white slip, also fastening on the shoulders, without sleeves, may be worn under the dress. The flannel and cotton slips should be put on together. (Fig. 10.) The dress should be put on

FIG. 5.

Another view of dress shown in Fig. 4, usually worn under long-sleeved flannel slip in the first weeks of infancy.

FIG. 6.

Baby with socks, diaper, knitted band, and undershirt with high neck and long sleeves. Buttoned down the front.

FIG. 7.

Convenient night-clothes with feet. Suitable for child after earliest infancy.

FIG. 8.

Long flannel skirt, fastened by buttons on shoulders. No sleeves. Worn with high-necked and long-sleeved undershirt.

FIG. 9.

White muslin petticoat, coming from shoulders. Worn over flannel slip. Only necessary under fine muslin dresses. Makes too many garments on very young baby.

FIG. 10.

Another view of petticoat shown in Fig. 9.

FIG. 11.

Child fully dressed with simple white nainsook dress, trimmed with lace edging; very simply but beautifully made.

FIG. 12.

View of long white nainsook dress. Baby fully dressed.

FIG. 13.

Baby dressed to go out, with sensible cloak with capes, and cap with very little trimming, with wadded silk cap underneath white muslin one.

separately. But from band to dress, the child should be turned over once only, and all done rapidly, causing as little irritation as possible. The simplicity of an infant's clothing cannot be too great. The needle-work may be as fine as possible, but ruffles, puffs, embroideries, and, above all, much starch, cannot be too strongly deprecated in the wardrobe of the modern baby. (Figs. 11, 12, and 13.) It is advisable to have a light woollen wrapper or dressing-gown, which can be quickly slipped on a child on taking it up at night or in carrying it from room to room; also light knitted blankets which can be easily washed are very useful. As soon as the child is able to sit up of its own accord and shows desire to use its legs for more than simply kicking, it should be put into short clothes, although the time of year and the climate must largely govern the change. It would be very unwise in a cold climate to shorten a child's skirts in midwinter, for example; but it is possible to make the change without risk before the winter begins. It is well to do so, rather than to keep the

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The writer is indebted to Messrs. J. B. Sheppard & Sons, 1008 Chestnut Street, Philadelphia, for the use of the clothing photographed for these illustrations.

child hampered by long skirts until the following spring. When the child's clothes are shortened, it is necessary to put on stronger foot-covering than knitted socks. For the beginning, there are pretty, comfortable little leather moccasins, and for a later period there are good broad-soled shoes. The greatest care should be taken in the selection of children's shoes, as their walk, their feet, and oftentimes their general health, are influenced by ill-fitting shoes. Corns are sometimes found on the feet of very small children, which by a little care might have been avoided. The heels of a child's shoes should be small, corresponding to the size of the foot. (Fig. 14.)

Good clothing for infants is made of carefully-selected material. So much difficulty is experienced by the shrinking of woollen material, that combinations of wool with silk or thread have been made for this purpose. These have the advantage of being light in weight, soft in texture, and washing well. The number of garments needed for cleanliness is of the greatest importance. That is the chief expense; although, of course, there is no limit where means are ample.

FIG. 14.

Model of best shoe for child's foot,—narrow heel, broad toe. For child not walking, buttoned shoe is most easily put on. After a child begins to walk, the laced shoe is better, with the same model,—narrow heel and broad toe. Model of shoe kindly loaned by Mr. W. H. Steigerwalt, 1015 Chestnut Street, Philadelphia.

CHAPTER III.

THE CHILD'S FOOD.

Formation of Milk.

THE natural food of the new-born child is the milk of the mother. This is gradually formed in the breasts, the time of its production varying with different individuals. With some patients fluid is present in the breasts in the early part of pregnancy. With others the milk is not formed until several days after the birth of the child.

Milk is a fluid which in all animals undergoes gradual but important changes. It is a living tissue, much like blood in many of its characteristics, and is first formed very gradually from the individual cells of the mammary glands or breasts. The fluid usually seen in the breasts at the time of labor, or soon after, is not fully-formed milk, but is called "colostrum." It is composed of water with imperfect milk-globules and young cells from the glands of the breasts. Colostrum has little nutritious value, but is useful as a natural laxative to empty the child's bowels. Before

birth, there accumulates in the child's intestines mucus and other material which must be thoroughly removed before the child's digestion can actually begin. A laxative is required, and this is furnished in the colostrum, which is the first fluid formed in the breasts. The emptying of the child's intestines prepares it for the digestion of the nutritious fluid, and the milk is formed in from two to four days after the birth of the child, when it is ready to receive and digest it.

The secretion of fully-developed milk is attended in some cases by considerable discomfort and disturbance, while in others the milk forms so gradually that little inconvenience is felt. Colostrum is a thin, watery fluid, often slightly yellowish in color, and does not resemble fully-formed milk. When milk is completely formed it is of a bluish-white color, leaving upon the side of a glass a distinct trace, and when put aside affords a considerable percentage of cream. The quantity formed in twenty-four hours depends upon the health of the mother, her freedom from care and anxiety, the character of her diet, and the stimulus which the breast receives from the nursing of the child, or the absence from stimulus if the child does not nurse. The composition of breast-milk varies

with the mother's diet and with the exercise which she takes, or her lack of exercise. Indigestible articles of food cause the formation of irritating compounds, which may make the milk exceedingly irritating to the child. In some cases severe mental emotion has been followed by the formation of poisonous compounds in the milk which have caused serious injury to the child. As the milk resembles the blood so closely, it is evident that anything which injures the patient's health must injure her milk, as it would her blood.

Human Milk and that of Other Animals.

The milk of all warm-blooded animals has many points in common, but differences exist between the milk of various species of the animal world. The milk of the cow is that most often compared with human milk, because most available for the artificial feeding of the child. The difference consists essentially in the fact that the milk of the cow is considerably richer in caseine or cheesy material than is human milk; hence the milk of the cow requires dilution or modification before it can be safely given to a child.

When Shall the Child Take its Food?

There is a natural tendency on the part of mothers to give the child nourishment as soon as it is born, and this is based upon the belief that the child requires nourishment at once to maintain its strength and vitality. In many cases, however, where the mother has a severe delivery, she may be in no condition to give nourishment to the child for a day or two after its birth. In other cases the child itself may not be ready to assimilate milk for a day or two after birth. Nature provides for the child's life by bringing it into the world with a supply of nutritious material in the liver, the marrow of the bones, and other portions of the body, upon which it can subsist for a day or two after its birth. It is a mistake to begin to feed the child as soon as it is born and to push the child's nutriment from the very moment of its birth. Its digestive organs must be gradually prepared to assimilate milk, and nature's indication in the matter may be safely followed.

When the mother is in good condition, she may have the pleasure of nursing her child as soon as she has rested after her labor. From this time on the child may nurse during the

first twenty-four hours, every four hours; during the next twenty-four, every three hours, and after that every two and a half to three hours, during sixteen hours out of the twenty-four, leaving eight hours for the mother's rest, or being nursed but once during the eight hours. If other intervals of feeding are desired, the physician will make a memorandum of what is needed, and give to the mother or nurse written directions stating clearly the intervals of feeding.

How Much Milk Shall the Child Take?

It is very difficult to estimate the quantity of milk contained in the breast. The stomach of a new-born child does not hold more than one or two tablespoonfuls of fluid. A healthy infant will often take an ounce of milk in between one and two minutes while it is nursing. If the child nurses for from five to ten minutes it can readily be seen that it will soon take a greater amount of milk than the capacity of its stomach will accommodate. This is provided for by the gradual dilatation of the stomach and also by the regurgitation of milk which is so often seen.

Regurgitation and Vomiting.

A marked difference exists between regurgitation and vomiting, or emesis. By regurgitation is meant a simple overflow of the child's stomach when overdistended. It is often said that a baby who regurgitates is especially vigorous and well nourished. It is true that children who nurse vigorously obtain their food much more rapidly, and hence the stomach overflows very easily. We recently had occasion to weigh a child just before nursing and to weigh it after it had nursed for three minutes. We found that the infant had gained four ounces during the three minutes in which it had nursed. From this it may readily be seen how easily a child's stomach may be overfilled and how natural it is that the child should eject the surplus.

The Curd of Regurgitated Milk.

If one notices closely milk which has been regurgitated, it will be seen that the particles ejected are not tough and tenacious, but are soft and very easily separated. The mass regurgitated is also white in color and is not accompanied by mucus. This shows that the

milk has not undergone fermentation in the stomach, but that it has been almost immediately ejected.

Vomiting.

When a child empties its stomach a short time after it has taken its food, it does so by vomiting, and not by regurgitation. Vomiting is accompanied by straining, and sometimes by coughing, and is very different from the simple regurgitation which shows an overfilled stomach only. Vomiting is a symptom of importance, and should be reported to the child's physician.

The Curd of Vomited Milk.

Milk which is vomited is ejected in a curd, and this upon examination is found to be a tenacious mass, yellowish in color, and not easily separated. It differs from regurgitated milk in the firmness and consistence of the vomited curd, in the color, and in the fact that the curd of vomited milk is usually very sour in odor and in reaction. As children rarely vomit, but often regurgitate, the mother should learn to distinguish between the two, and thus avoid unnecessary anxiety.

Too Rapid Nursing.

In some cases the child seems to take milk so rapidly as to overdistend its stomach and create colic and disordered digestion. This may be corrected by limiting the time during which the child is allowed to nurse, by taking the child away from the breast for a moment, and by compressing the nipple slightly between the fingers to make the flow of milk less rapid. A child that nurses rapidly should be satisfied in ten minutes' nursing, with several pauses to interrupt the filling of the stomach.

Feeble Nursing.

Children are sometimes seen to nurse too feebly. When the breast is excessively engorged it is difficult for the milk to flow with ordinary suction. Here the fault would lie with the breasts, and not with the child. When the child is feeble from constitutional weakness, it endeavors to withdraw milk, and succeeds but partially, if at all. If the child is tongue-tied, or has a malformation of the mouth, the cause of its failure to nurse will be detected by the physician, and an appropriate remedy applied.

In cases where the breast is overdistended the flow of milk should be started by the use of the breast-pump. If necessary, the breast may be gently rubbed in addition. When the milk has started, the child may be applied, and it will then have no difficulty in nursing. Where children are too weak to draw upon the nipple, the milk may be extracted from the breasts with a pump and dropped into the mouth of the child with a medicine-dropper.

Shall the Child be Wakened to be Fed?

Mothers often hesitate to waken the child to feed it. It is argued that the child requires sleep, and that when it is hungry and should have food it will readily waken. If this principle be followed the child will frequently sleep through the greater part of the day, remaining awake and fretful during the night. In cases of illness the physician will determine whether the child should be waked for food, or whether sleep is more valuable than nourishment. In good health it is better to train the infant in a habit of regular feeding and to rouse it at regular intervals for its food. In this way the child and the mother obtain their proper rest, and the infant's digestion is usually excellent under such a system.

It is often difficult to induce a child to sleep at night and to remain awake during the day. In many cases the child seems to turn night into day, and will positively decline to sleep during the night or to remain awake during the day. This cannot be corrected at once, but the rousing of the child for regular feeding is one of the best means of correcting the difficulty. If the child's room be kept very light during the day, it will assist in rousing it. Its baths and the changing of its clothing may be so arranged as to disturb it at regular intervals during the day.

Importance of Regularity.

Too much emphasis cannot be laid upon the importance of observing regularity in feeding. Not only is the comfort of mother and child greatly involved, but the child's digestion may be well established or permanently damaged through the observance or neglect of this precaution.

CHAPTER IV.

ARTIFICIAL FEEDING.

THE question of feeding a child artificially is so important a matter that the physician's aid should be invoked before making a decision. To determine its necessity, the physician should examine a specimen of the breast-milk, thus ascertaining its fitness or lack of proper ingredients for the nourishment of the child. Before nursing is abandoned, the mother should co-operate with the physician, if he thinks best, in endeavoring to improve the quality of her milk and to increase its quantity. This can be done by closely following directions for diet, by taking exercise in the open air, by using water freely, and by putting the patient in the best possible general condition. When, in spite of such efforts, the quality of the milk is such that it does not agree with the child, and the quantity of the milk is deficient, there can be no question about the necessity for artificial feeding. While physicians sometimes endeavor by local treatment to increase the quantity of milk,

they rely usually upon hygienic measures to secure this result.

Wet-Nurses.

It was formerly customary to employ a wet-nurse when the mother failed to nourish her child. Since artificial feeding has been better understood and more successfully applied, wet-nurses are rarely used. The objection to a wet-nurse is the fact that it is hard to be absolutely sure of her physical condition, while the circumstances which lead her to abandon nursing her own child usually make her a bad nurse for the child of another. If she is a married woman, and her husband be living, he will usually interfere with her to obtain her wages; while if she be unmarried, it is hard to avoid suspicion concerning her character. Personally, we do not recommend wet-nurses, but select them as best we can when patients are earnestly desirous of having them.

Cow's Milk.

The milk of the domestic cow is most often used in artificial feeding. It is believed that milk obtained from several cows and thoroughly mixed is better than milk of especial richness taken from a single cow. The herd

should be sound, clean, well fed, and properly cared for. Experience shows that cows giving milk not especially rich in cream are best adapted for this purpose.

Cow-stables, Barns, and Pasture.

It is quite as important that cows furnishing milk for children should have clean, sanitary stables, and that their pastures be good, as that the animals themselves should be sound. It is impossible for cows compelled to stand in filth or in illy-ventilated barns to be in good physical condition. Unless pasture be carefully selected, at some portions of the year weeds are found which render the milk irritating and unfit for use. A herd should have pure water in abundance.

The Care of Milk.

While it is important to modify or prepare milk for the use of children, it is absolutely essential that such milk should be secured in a clean manner and that it should be kept clean until it is used. The cow must stand in a clean place while being milked. It should be as carefully groomed as a well-kept horse. The utensils and the hands and clothing of

those who milk cows and work in the dairy should be thoroughly clean. While these precautions may be difficult to secure, parents should co-operate with the medical profession in a demand for them. In the best dairies they are carried out, and the higher price obtained for the milk shows the appreciation of the public.

Milk must be furnished to the consumer in a clean, sealed, glass vessel. It must be delivered promptly, and until the time of delivery must be kept at a reasonably low temperature. The bottles in which the milk is delivered must be cleansed by boiling. When milk is sent some distance to a consumer, it must be packed in ice and delivered in a small ice-chest. For ocean voyages or long railway journeys, milk may be especially prepared, and put into packages designed for that purpose.

The child's milk should be placed in a separate refrigerator, and nothing else should be kept in it. Nursery refrigerators are furnished for such purpose, and some are especially constructed for use in travelling. It should be secured by a good lock, so that the milk cannot be tampered with by those who do not have the care of the child.

Laboratory Modification.

In some cases the physician will order the preparation of the child's milk at a laboratory. This takes the place of a drug-store, and the physician's order corresponds to his prescription for a drug or a medicine. Milk so ordered is delivered in special cases or refrigerators, in bottles, each containing a meal for the child. The bottles are corked with cotton, and before the child takes the milk, the cotton must be removed and a rubber nipple placed upon the bottle. The bottles are returned to the laboratory for refilling daily. Under such an arrangement the mother or nurse has very little to do with the preparation of the milk. It is only necessary to warm the milk if it be cold, to place the rubber nipple upon the bottle, and to give it to the child at regular hours, as the physician may order. Milk so prepared is consequently more expensive than milk purchased in the ordinary manner; and if the patient be at some distance from the laboratory, it may not be possible to carry out this arrangement.

Home Modification of Milk.

In many cases physicians prefer to give explicit directions to the mother or to the nurse,

and to have the milk for the child's use prepared at home. Certain quantities of unskimmed milk and cream are procured,—milk-sugar and lime-water are often ordered,—and the milk is prepared in accordance with the physician's written directions. If these are expressed in ounces, the mother should have an ounce measure. Tablespoonfuls are often employed as the unit instead of ounces.

The mother will provide herself with nursing-bottles, with appliances for cleansing them, cotton for corking the bottles, and rubber nipples; a suitable thermometer and litmus paper are also needed. The physician's directions should be in writing, and should cover the number of meals, the quantity of each meal, the intervals of feeding, and the method of preparation. This last is usually expressed as follows: Calculating the entire amount for twenty-four hours, the physician directs that this be prepared by taking the required quantity of milk, cream, and water. Lime-water is often included, sugar of milk also. The entire quantity of food made by combining the ingredients is placed in a clean, suitable vessel and heated for a given number of minutes to a required temperature. It is then placed in clean bottles, corked with cotton, and

put in the refrigerator until the time for feeding. Others prefer (and this, we think, is the better way) to mix the entire quantity of food in a thoroughly clean vessel and then to pour it into the number of bottles required. After corking the bottles with cotton, they are placed in water in a sterilizer, or in a pan, and are heated to the number of degrees ordered by the physician. The time during which the heat is applied is also carefully noted. The milk is then placed in the refrigerator until needed.

Pasteurizing and Sterilizing.

By these terms are meant two methods of destroying germs which may be present in milk.

Pasteurizing.—By pasteurizing is meant heating a liquid to 167° F. for six minutes. Practically this is scalding, but not boiling, a fluid. By this means the bacteria most commonly found in milk are destroyed, while the digestive and nutritious properties of the milk are very slightly impaired. This may be done exactly if a sterilizer or a vessel provided with a thermometer is used. If such an apparatus is lacking, the milk may be put into a vessel, set in a basin containing four or five inches of

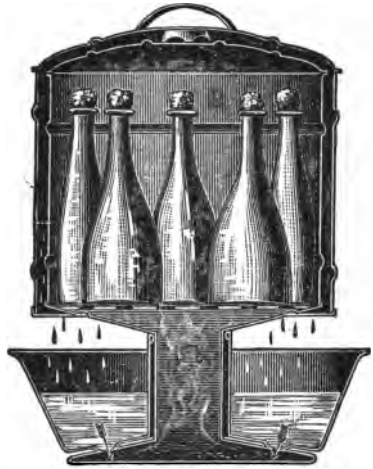
FIG. 15.

Arnold sterilizer.

water, the whole placed upon a fire, and the water in the basin allowed to boil briskly. The milk will then begin to simmer, but should not be allowed to boil. This is practically pasteurization. (Figs. 15 and 16.)

Sterilizing.—Sterilization requires a greater degree of heat,—212° F.,—which is the point

FIG. 16.



Interior of Arnold sterilizer.

of boiling. Sometimes it is necessary to keep milk for a considerable time. When this is the case, it may be boiled for twenty or thirty minutes, and thus made completely sterile. Unfortunately, this process makes the milk less

digestible and less nutritious, and hence is to be avoided whenever possible.

Asepsis in the Care of Milk.

The best results are obtained by the use of milk which is neither pasteurized nor sterilized, but which is absolutely clean. It is extremely difficult to obtain such milk, because most of the milk furnished passes through the hands of a number of persons, each of whom is apt to be careless in some particular. If it were possible to obtain fresh milk perfectly clean and sound, the child would thrive much better upon it than on milk which has been heated or prepared in any way. Every effort should therefore be directed to obtaining clean and sound milk. Those who purchase milk should demand from dairies that the milk receive the approval of inspectors and physicians. In some cities physicians interested in the care of children inspect the various dairies, and give recommendations only to those which they find clean. When we remember that scarlet fever, tuberculosis, and diphtheria have been conveyed by milk, we can see how important it is that such a source of disease should not be neglected.

All persons should be exceedingly careful

in cleansing vessels in which milk is kept. It is not sufficient to wash them in soap and hot water, but the jars and bottles should be boiled in an alkaline solution for half an hour. If some of the milk becomes adherent to a bottle or a jar, it can be removed by shaking shot in the bottle half filled with hot water. When bottles and jars intended to contain milk are not in use, they should be kept filled with a saturated solution of boracic acid. Rubber nipples should be repeatedly boiled and kept in boracic acid solution. Cotton used to cork bottles of milk should be made sterile by baking. Spoons, measures, filters, and all utensils which come in contact with milk must be kept absolutely clean. An ice-chest kept for milk must be repeatedly cleaned with strong alkaline solution, left open at frequent intervals, and thoroughly dried. It should not be allowed to leak, and the wooden portion should be preserved from decay.

Contamination of the milk may be suspected if it has a foul odor, if the child vomits it soon after it has been taken, or if there is the slightest suggestion of blood or pus in the milk or upon the bottle. Good milk is neutral or feebly acid in reaction, and if excessively acid it is unfit for use.

Mixed Feeding.

Physicians sometimes prefer to allow the mother to nurse the child partially, completing the amount of the child's food by the use of cow's milk. This is often spoken of as "mixed feeding." In such cases it is customary to allow the mother to nurse the child at night and in the morning, reserving the artificial food for the middle portion of the day. Thus the mother is enabled to go out, while the child has the advantage of its most digestible food before the time for its sleep. In these cases the precautions to be taken in the preparation of bottles, etc., are the same as those in cases in which the child is artificially fed entirely.

Feeding as Children Grow Older.

Nature indicates a change in the child's food as the teeth appear. It is no longer necessary to confine the child's nourishment to liquids, but food may be taken which will give the child some use for its newly-forming teeth. Parents are often in haste to stop liquid food and begin mixed feeding. Unless a child is extraordinarily robust and leading an outdoor life amid the best conditions, it is well to be slow and cautious in

changing from a liquid to a mixed diet. This should never be done without the sanction of the child's physician.

Bread.

The first step in a mixed diet is usually the substitution of bread and milk for milk only. Cereal preparations are combined with the milk which the child takes from the bottle, and the child is given a number of bottles and one meal of bread and milk during the day. In selecting bread for children's diet, it must always be thoroughly baked and should not be strictly fresh. In fact, bread which has been baked several times is often found advantageous in these cases. Thus zwiebach—as its name implies, "twice baked bread"—is very easily digested. So good wheat bread, whole-wheat bread, graham and rye mixed, and zwiebach should be chosen. Some children will easily digest freshly-made toast if it be soaked in milk or in broth and the crust discarded. Physicians often order that bread be freely buttered, so that children may obtain the advantage of the fat.

Gruels and Jellies.

One of the most valuable additions to milk in the feeding of children is gruel or jelly.

This may be made from oats, barley, rice, wheat, or arrow-root. Those most frequently used are oat, barley, rice, and arrow-root jellies. By gruels we mean a thin mixture made by boiling grain or flour, and, if required, straining. By jellies we mean the nutritious properties of the grain obtained by prolonged boiling until the greater portion of the water has evaporated and the jelly forms, as its name implies, in a thickened condition. We prefer the jellies made from grain to gruels made from flour. Properly made jellies are homogeneous, without sediment, smooth, and exceedingly nutritious. Their mode of preparation may be obtained by reference to the Dietary appended to this book. Such jellies contain albumen in considerable quantities and other very digestible substances derived from the starchy portion of the grain. These jellies may be mixed with milk in the proper proportion, and may be salted or sweetened with sugar of milk as the physician may direct. They should be prepared by a reliable person, as it requires patience and attention to make them properly.

Broths and Soups.

With robust children or those recovering from wasting disease broths and soups are

often used in mixed feeding. Those most frequently selected are chicken, mutton, and veal broth. Their preparation is described in the Dietary. As with the jellies made from grains, these broths must contain a large percentage of nutritious matter. Ordinarily made chicken broth is a watery concoction of little benefit in feeding a child. Meats for broths must be carefully selected, and should be absolutely sound. A vegetable stock may be employed to advantage, unless the physician orders otherwise. As broths decompose rapidly in hot weather, they should be used as soon after making as possible; and if the effort is made to keep them, they should be kept upon ice in thoroughly clean vessels. Children usually prefer well-salted broths. Pepper and other condiments should be avoided in broths used by children.

Beef Juice.

The juice of beef has practically superseded beef tea and beef broths in the practice of physicians. Beef juice is so superior in nutritiousness, and so easy of preparation by intelligent persons, that it forms a valuable addition to our diet-list. Its preparation is described in the Dietary. Care must be taken

to select good beef, and that the juice be used immediately after it is prepared. By experience the child's care-taker can estimate the amount required at a feeding. In this way the beef juice is prepared freshly. It is so rich in nutritious elements that it cannot be taken frequently nor in very large quantities. Beef juice is sometimes added to the child's bottle of milk, in accordance with the physician's orders.

Purées.

A valuable combination of milk and vegetable albumenoids is obtained in purées. These are most useful during the times of the year when fresh vegetables are abundant. Peas, beans, and corn are especially suited for these preparations. They should be made with great care, properly seasoned with salt, and may be taken from a nursing-bottle or from a cup. The milk contained in them is thoroughly sterilized by the cooking, and these purées form a practically sterile and excellent article of food.

Junket and Custards.

Milk curdled by rennet and eaten with cream and a little sugar is often very palatable to children. Custards without excessive

sugar are useful in the mixed diet of early childhood. Rice, custards, or rice-puddings, blanc-mange, sago, or tapioca, and bread-puddings are also relished by children who have advanced sufficiently to use a mixed diet. Sponge cake and milk form a very acceptable combination.

Eggs.

Children are usually given an egg before they are allowed to eat meat. Eggs so used should be absolutely fresh and soft, boiled or poached. Bread or toast should be taken with the egg, and stewed fruit if ordered.

Meat for Young Children.

The mistake is frequently made of giving meat to a young child before it is prepared to digest and assimilate it. A child should be well advanced, with abundant teeth and sound digestion, before it is allowed to eat meat. A young child may suck a smooth chicken bone or a chop bone to advantage, thus obtaining the fat and nutritious material from the canal of the bone.

Fruits.

Fruits form an important part of the dietary of young children. The juice of fruit may

first be used. The juice of a ripe orange in season is often greatly relished and is very beneficial. The juice of stewed prunes or of stewed dried peaches may also be given. These should be of the best quality and thoroughly and carefully cooked and without an excess of sugar. As the child grows older it may take the pulp of an orange or the pulp of prunes without the stones and skins, or thoroughly soft stewed peaches. The pulp of a baked or a stewed apple will be found acceptable. Berries are not suitable for young children; and peaches, pears, and apples may be cooked and used to advantage during the hot months of summer, if the child's digestion be easily disturbed. Many children who cannot digest raw fruit will enjoy and are benefited by cooked fruit. Preserves, jellies, jams, marmalades, and sugared fruits are inferior to the fruits which have been described, as they all contain an excess of sugar. Very acid fruit should not be given to children, and unripe or partially spoiled fruit should not be used under any circumstances.

Sweets.

It is often said that children wish for large quantities of sweets. This idea is more fancied

than real, although children relish a moderate amount of sugar or syrup. They should be given it, if required, in their food or occasionally in a small quantity of chocolate.

Beverages for Children.

It is a great mistake to give a child tea and coffee because its parents take them. Pure water, milk, and thin cocoa are the beverages suitable to childhood. There can be no worse practice than giving a growing child sips of tea and coffee when it is at the table with its parents. Alcoholic beverages are unnecessary in childhood, unless some especial indication develops. During childhood the nerves are particularly sensitive to the action of alcohol, and hence it should be carefully excluded from the diet.

Solid Food.

Parents often inquire eagerly how soon the child may take solid food. The answer to this question must come from the physician, and he will be guided by the weight, vigor, and general development of the child. The first solid food employed is usually egg; some physicians recommend baked potato, and occasionally the white meat of chicken or turkey. Poached eggs, prepared just before the child

takes the food, are usually best for a beginning of solid diet. The egg should be salted, and the child may take it with bread and butter. If meat be given, it should be cut into small pieces, as children are sometimes in danger of choking from too large a piece of meat or of bread. Physicians who value the potato highly in children's diet direct that it be taken as soon as possible after being thoroughly baked, finely mashed with butter and salt, or with milk, butter, and salt.

To allay the restlessness of teething children, they are often given a chicken bone or a chop bone, so that they may use the coming teeth freely by biting upon it. Splinters must be carefully removed from bones given to a child, lest it suck off and swallow a splinter, with a possible very bad result.

Vigorous children are sometimes allowed to eat a ripe apple raw, peeled and with the seeds and the core removed. If the child's digestion is not strong, this may produce colic and distress, and it must therefore be limited to well developed children only.

Conditions which Favor a Child's Nutrition.

We sometimes see children who are carefully and properly fed, but who do not gain in

weight and are apparently not well nourished. There is more to be considered in the nourishing of the child than the choice and preparation of its food; and if other important factors are neglected a good result may not be obtained.

We have spoken of the importance of regularity, and too much emphasis cannot be laid upon this point. Next in importance may be considered the general condition of the child at the time when food is taken. A child that is irritated, angry, and distressed, very cold or very hot, cannot assimilate food, no matter how perfectly prepared and how correctly chosen. Here the tact and good judgment of the nurse is of the greatest importance. The child's life must be so ordered that its meal-times succeed a period of rest, and that the times for feeding are not disturbed by useless complications. To secure this result strictness is necessary in the child's life, and at first sight it may seem a harsh and unnecessary precaution to put aside all else for the animal wants of the child. A happy medium is to be sought, and the mistake is more apt to be made on the side of laxity than on the side of strictness. Excitable and irritable children, hard to feed, require strict regulation of their

daily lives; and this strictness does not lie so much in what is done to the child itself as in preventing those things which irritate and annoy a child. What grown person would like to be taken immediately after a meal and actively shaken or pounded upon the back while some unmeaning words are rapidly recited in a loud and disturbed voice! And yet this is often done with an unfortunate infant who is suffering from colic or indigestion. The human animal is no exception to the rule seen among other animals,—that repose, or at least comparative quiet, should follow the taking of nourishment.

The most difficult matter to regulate in nourishing a child is not the child, but those interested in it. Through kindness each relative or friend feels moved to suggest some modification or change of food, while most persons have no hesitation in disturbing the child's rest or food for the purpose of inspecting it or playing with it. While a strong child may bear such interruptions without much harm, in the case of children difficult to nourish the result is disastrous, and care and tact are required to protect the child from its friends.

The influence of air and sunlight cannot be

neglected in the nourishment of children. Fear is sometimes expressed lest the child taken into the open air after feeding should drop asleep. No better thing can happen to a child than to sleep properly protected in the open air in bright clear weather. It should be protected from the wind and shaded from excessive heat; but in cool weather the rays of the sun should be allowed to fall directly upon its body, only the face being shaded. Gentle massage also promotes nutrition in children, as it does in adults, and takes the place of more active exercise. The limbs of the growing child must be free to move, and thus exercise will be secured by the child itself.

Personal Influence in Nourishing Children.

It is sometimes observed that a child which does badly under the care of several persons, as in an asylum or hospital, will, when removed from the institution and given to the care of one kind and loving person, immediately do better. While a large part of this improvement will be due to the physical conditions obtained after removal from the hospital, a considerable element in the gain must be ascribed to the influence of the one care-taker. What is called "mothering" a child is often a

most important factor in its well-being. While the tact suggested by affection is better than professional skill in some cases, the best results are seen where both are combined. The nurse who is fond of children will do more for them than one who is not; and those who have not the advantage of training can supplement a natural fitness by intelligent observation, and thus become successful in this branch of work.

CHAPTER V.

AIR AND EXERCISE.

No child can be healthy who does not have abundant fresh air and proper exercise. In changeable climates, and especially in cities, it is hard to obtain these. The attempt sometimes resolves itself into taking considerable risk to secure a decided and positive benefit. During the warm months of the year fresh air is obtained with comparative ease. In hot weather the early morning and the early evening give sufficient coolness to invigorate a young child. During the middle of the day

the external atmosphere is too hot for safety. During the winter months parents are often afraid to send children out of doors lest they take cold.

Catching Cold.

The term "catching cold" is commonly used to describe several conditions. A simple catarrh following exposure to cold is almost inevitable and not dangerous. It results in slight running at the nose and possibly a transient cough which disappears in a few days. When the child inspires infected dust, and when the weather is not only windy and dusty, but cold, more serious conditions are apt to develop. Germs capable of producing blood-poisoning when introduced into a cut or wound may enter the mouth or nostrils through inspired dust. The germs of tuberculosis blow about the streets from the dried sputum of tuberculous patients. Germs of other diseases are also found in street-dust and in the dust of public buildings and crowded rooms. A cold, windy, dusty day exposes the child first to the simple catarrh which often follows the breathing of cold air, and then to the germs of diseases which find a favorable soil in catarrhal mucous membranes.

Exchanging Diseases.

An unavoidable danger in sending children out in towns and cities is the acquiring of contagious diseases from other children. Child-nurses invariably talk together in streets and parks, comparing children under their charge and incidentally allowing a child recovering from whooping-cough to give it to another child, or a child recovering from scarlet fever to present this disease to an acquaintance. Parks and public squares in cities are exchanges for children's diseases, and the usual policeman upon the spot facilitates the exchange by attracting the various child-nurses who may be passing.

Heat and Cold.

If the air be pure a young child can bear a considerable degree of heat or cold without injury. Dry cold and dry heat are far less dangerous than heat and cold accompanied by a high degree of moisture. In cold weather sunshine adds greatly to the stimulating influence of the air and removes much of its danger. Even in hot weather, if the sun is not allowed to fall directly upon the child,

sunshine is preferable to great heat with much moisture and a clouded sky.

How Shall the Child go Out?

An infant usually takes its first outing in the arms of its nurse in a carriage. If the weather is cold, in addition to its house clothing, a suitable cloak and cap should be worn, with mittens for the hands and woollen or fur overshoes for the feet. In addition the child may be wrapped in an afghan or blanket and held in the nurse's arms.

When the child is a little older it goes out in its own carriage. There are good and bad carriages for children. The best are strongly built, with good springs, and wheels with rubber tires. The top fits well over the carriage, and may be thrown back if desired. The carriage must be large enough to allow the child to recline comfortably, at full length if desired. The top should fit tightly about the sides, for use in cold weather. We are not favorably impressed by many of the carts in which young children are taken out, for they are placed in a semi-sitting posture and fastened with a strap. As a result the child is jolted considerably and receives but little support from the cart. We have seen young children

much fatigued and very uncomfortable in these carts. When the child grows old enough to sit up in the carriage there will be no difficulty in raising it to a sitting posture by the use of suitable pillows or cushions.

Where Should the Child Go?

In cool or cold weather the child should go in the sunshine, if possible. In cities the sunny side of a street should be selected, and the wider the street the better. If a square or park be chosen, the child will do well to avoid others if contagion is feared. It must also be remembered that a child recovering from a contagious disease should avoid others through fear of contamination. Occasionally in a city a long bridge or an open plaza is available as an airing-place. It is better to take a child to such a place and to shelter it from the wind by extra wraps than to give it air which is impure and not thoroughly influenced by the sun. In the country there is little difficulty in finding a suitable place in which a child may take its air. If the ground be damp from snow or mud, it may be well to keep the child upon a piazza, and not to put it upon a lawn. If a child is taken for a drive, the dusty and dirty streets of a city

should be avoided and such localities chosen as have the best and purest air.

Airing In-Doors.

For city children it is often safest not to take the child out of the house except on rare occasions through the late autumn, winter, and early spring. This is done in the case of frail children to avoid contagion arising from infected dust or from meeting other children with contagious diseases. A child can be perfectly aired in a city house and at better advantage than by going upon the streets. To do this a room as high in the house as possible should be selected, and preferably a room which during at least some part of the day receives the sun. The child should be dressed as if for the street, the windows of the room widely opened, the doors closed, and the child placed in its coach or carried in arms as it would be if it went upon the street. The advantage of this method of airing is found in the fact that the air above the street is better than that near the surface of the ground, that the child is not exposed to personal contagion, nor is it exposed to strong draft if the doors of the room be shut. If the house be large, different rooms may be selected in

accordance with the weather. If a cutting wind is blowing from the north, a southerly room is preferable; and if a wet and rainy wind is blowing from the southeast, the northern room may be chosen. To succeed in thus giving a child air in the house patience and regularity are required. We have repeatedly demonstrated the fact that a child may be kept in splendid health with abundant fresh air without leaving its house during a winter. Child-nurses naturally dislike this method exceedingly, as they do not get upon the streets and cannot meet their friends and acquaintances as otherwise they would do.

Sleeping in the Open Air.

We have already alluded to the fact that if thoroughly comfortable a child will naturally sleep in the open air. In some cases children have been placed out of doors at the regular time for their nap to secure better sleep. In country houses with piazzas this may be carried out during some of the cooler months of the year. If the child be warmly wrapped and placed in the sunshine it will sleep with great comfort and advantage. In one instance a child suitably wrapped and protected was placed in a basket upon the roof of a piazza.

FIG. 17.

Abdominal massage: rubbing up the child's body along the course of the ascending bowel.

FIG. 18.

Abdominal massage: rubbing down the child's body along the course of the descending bowel.

It was sheltered from the wind, having a southern exposure, and slept in the sunlight with great comfort and benefit. This cannot be done without the exercise of good judgment, and cannot be trusted to ignorant or careless servants. Where the mother assumes the personal charge of her child, it has been done with great benefit and advantage.

A Little Child's Exercise.

An infant gives abundant evidence of its desire for exercise in the frequent rotation of its limbs and trunk. In feeble children, who especially need exercise, this should be supplemented by massage given after the morning bath. The muscles should be thoroughly gone over and kneaded gently while the skin is thoroughly rubbed. Olive oil two parts and alcohol one part are useful with frail and ill-nourished children. Massage of the intestines should be included in this, especially in children who suffer from constipation. (Figs. 17 and 18.)

The child's natural ambition, as it grows, is to get upon its feet, and here fear is often expressed lest the child places its weight upon the feet too early. A healthy child will rarely do itself injury ; and cases in which harm has come from the early assumption of the erect

posture are those in which the child has been placed by others upright upon its feet. If the child be put upon a flat, soft surface, it will do what its strength permits without injury, gradually raising it until finally it is almost able to stand. When it can pull itself up upon its feet by its own effort, it is usually time to allow it to make the effort to stand and walk.

Most children creep before endeavoring to stand or walk, and this exercise requires no regulation, except to guard the child from dangerous places. In noticing the effect of exercise upon a child, it must be remembered that a child's legs do not seem perfectly straight in all cases. This does not mean that a permanent curvature of the bones is present. Usually the apparent bowing of the legs passes away as the child grows older and better developed.

Exercise with Toys.

Toys and mechanical devices to give a child exercise are sometimes useful and frequently have objectionable and dangerous elements. If a child be put in a circular stand upon rollers, it is tempted to remain too long upon its feet, as it cannot lie down. The use of the swing or horse requires intelligent supervision and is seldom injurious. It is usually

better not to put a child in a mechanical device which prevents its lying down or sitting down when it is fatigued. It would be better if the child were to do less and to go forward more slowly.

It is questionable whether the best results are obtained by training a child in swings of various kinds. The rocking of the cradle in infancy may make it difficult for a child to rest or sleep without this motion. As the child grows older, some nurses try to put it to sleep by rocking its carriage backward and forward. The pleasure of rocking the child to sleep in the arms of the mother must not be denied her, but usually she can soothe the child to slumber, disturbing it as little as possible. The habit of dropping asleep quickly as soon as the head touches the pillow is sufficiently valuable to adults to justify its formation in childhood. In those occupations which interrupt sleep, and in times of great anxiety and exertion, the power to sleep quickly and quietly is an immense advantage. It is quite possible that incessant rocking motion may develop a more excitable condition of the nervous system than normal. It certainly is not necessary for health and comfort, and we believe may be a positive disadvantage.

CHAPTER VI.

THE NURSERY.

THE selection of the nursery or living-room for the child is a matter of considerable importance. Where a child has but one home for the entire year it is difficult to find in any one room all which is required. Thus the southern room in winter is delightful, but is too warm in summer. The child's quarters must often be assigned in accordance with the needs occasioned by climate. Where a child changes its home during the summer, its winter home should be a room with a southern exposure, if possible. To avoid contagion from sewage, there should not be in the room any direct communication with the drain-pipes of the house. It is convenient to have a bath-room upon the same floor with the nursery. An open fireplace with an open fire is of the greatest advantage. A furnace flue should not open into the room if it can be avoided. While the child is an infant, an open fire is rarely dangerous. As the child grows older the fire can be guarded by suitable screens.

If possible, a nursery should have smooth, hard walls, so that they can be washed and disinfected in case of a contagious disease. There should be as few hangings as possible, blinds and shades taking their place. Rugs should be used instead of carpets, so that they can be removed and thoroughly beaten and aired at regular times. A polished floor is dangerous for small children, because they often fall upon its slippery surface. A well-painted floor is less objectionable. The colors upon the walls and floor should be light and thoroughly pleasing, and care should be taken to select those paints which do not contain substances capable of absorption. Cases of arsenical irritation have been detected in children in nurseries whose wall-paper contained arsenical pigment. The furniture of the room should be simple and thoroughly comfortable. Iron or brass cribs and beds are preferable to wood, while the mattress and bedding should be well made and carefully chosen. When the child first begins to creep, a blanket may be spread upon the floor, and the child allowed to play upon it, or a bedstead may be put up in the room, a mattress placed upon it, four sticks or poles lashed to the four corners of the bedstead, and canvas or sheeting

then drawn around the poles to make an enclosure. This prevents the child from falling off the bed, while being removed from the floor protects it from drafts. A little child often enjoys its play upon such a bed with safety. It is well to hang upon the walls of nurseries pleasing colored pictures. No one can tell how soon a child will notice some picture or toy; and if it be surrounded by good pictures, properly colored, a beginning may be made in the development of taste.

Ventilating and Warming the Nursery.

During the cooler months it is sometimes difficult to properly ventilate the nursery. If the windows are lowered or raised a draft is feared, and without the constant entrance of fresh air the atmosphere of the room may become impure. A simple and good ventilation is obtained by a strip of board made to fit beneath the lower sash of the window. The lower sash is raised and the board inserted, thus making a space between the upper and lower sashes. Air cannot blow though this space, but it can gradually enter the room. A better ventilator is one in which the board placed beneath the lower sash contains some device for admitting air, such as a brass pipe,

about the size of a small stove-pipe, curved upward, opening within the room. This contains a valve by which the volume of air can be regulated. A constant current of air thus circulates through the ventilator and the space between the upper and lower sashes. On cooler days the valve in the lower portion can be closed and only the upper air space used. If the room has an open fireplace in addition to such ventilators, its air-supply can be more thoroughly changed. Where draft is especially to be avoided, the use of screens is advantageous. Screens for a nursery should be made of such white or colored materials as can be readily washed. The frames should be made of hard wood, finished in light-colored enamel paint. Duplicate coverings should be made for each frame so that they can be washed at frequent intervals. Should a contagious disease occur among the children, the coverings can be disinfected by boiling, and the wooden portion fumigated and washed with an antiseptic solution. Such screens may seem at first costly, but if well made they last indefinitely, and are of the greatest service in case of illness among children or adults.

Nursery Furniture and Utensils.

The upholstering of nursery furniture should not be done in the usual manner. The chairs and couches should have cushions whose covers can be removed and washed and refilled with material which can be readily renewed. Expensive and permanent upholstering should not be used in nursery furniture. A small table at which the children can sit is a great pleasure as they grow older, and miniature sets of furniture early teach them the use of such things. Enamel-ware, agate-ware, and especially prepared porcelain or earthen-ware, should be chosen for the utensils, if possible. In choosing toys care should be taken to avoid those whose colors readily wash off or which contain parts that may be easily broken or may wound the child. The best quality of unpainted rubber goods should be selected. Ivory toys have long been preferred for teething children, and an ivory ring has comforted such children for many generations. Modern ingenuity has provided for children thousands of toys where formerly but few could be obtained. It is interesting to notice that the most elaborate toys usually fail to interest the child. The child's taste is often

vitiated by tradition, prejudice, or fashion, and a healthy child usually selects some one object, often ugly and of little value, to which it attaches an affectionate interest. It would be well if such simplicity in taste accompanied the child through its later life. It is not the number of the child's toys, but the way in which it is taught to value them and its own healthy nature, which bring it joy.

There should be in a nursery some receptacle for a child's toys, and the child should be taught to put them in order at regular times. The early formation of habits of regularity is well worth the trouble and attention necessary to bring it about.

The Location of a Nursery.

It is often of advantage to place the nursery as high in the house as possible. The noise which the children make in playing will not then annoy the adults of the family; the air is better, and occasionally the child's nursery may in summer communicate with a roof where a garden is made. A summer nursery, or roof-garden, is of great advantage to those children who are compelled to remain in the city during the summer months.

Nursery Education.

The beginning of a child's education may be made with great advantage in the nursery. It is not necessary to institute any formal method of instruction, but a safe principle of education would seem to be the bringing out and development of the natural qualifications of the child. It is of primary importance that the child be surrounded by those who are habitually kind, gentle, and honest. Such persons are difficult to find in any walk of life; and no greater mistake can be made than to place a child in the custody of a caretaker who is dishonest, ill-tempered, or revengeful. Such a person will teach the child to deceive most successfully.

The regularity which should be practised in the nursery has an educational influence upon the child. As it learns that its wants are supplied at a regular time, it soon becomes accustomed to an element of regularity and reliability. If the child is not indulged whenever it cries, it soon learns the value of self-control. Regularity and self-control are large factors in forming discipline, and thus, unconsciously, even the infant receives a proper discipline.

The child's natural impulse is to use the hands and feet, and this may be taken advantage of by giving the child toys that will teach it to construct and arrange. Such articles are found in great abundance in modern shops. The child's memory readily develops by the repetition of impressions, and it soon learns to recognize and remember the principal events of its life. Children very soon acquire the power of reason by connecting phenomena which influence their comfort, and in this way they pass gradually from a condition of apparently automatic life to the beginning of reason and volition.

There seem to be two theories of education for children. One may be called the stuffing process, by which the child is made to resemble an intellectual sausage. As soon as possible the child is made to learn and commit to memory things without logical relation, for the sake of remembering them. This is carried to a higher stage in the memorizing system of education adopted in many schools. It does not improve the power of original thought in the child; it does not teach the child to reason, nor does it fit it in the best manner for the practical duties of life.

The other method of education is more difficult, but is more reasonable. It consists in bringing under the child's observation such phenomena as shall enable it gradually to acquire a knowledge of itself and the world surrounding it. The effort is made to connect the things which happen to the child, and thus gradually to establish a recognition of the sequence of these phenomena. Curiosity is one of the most prominent characteristics of a healthy child, and all that is needed is to take advantage of this fact and to feed its curiosity with the proper material,—to teach it to observe and to reason. When these powers have been established its further education becomes a natural and appropriate process.

Nursery-Maids.

A most important need in domestic service at present is that of competent nursery-maids. By these we mean young women of sound physical and moral health, affectionate, faithful, and honest in disposition, and suitably trained to take care of young children. They must be trained in hospitals devoted to the care of infants. They must be selected with care, and instructed to bathe the child properly, to prepare its food under the written

directions of its physician, to do the simple acts of nursing, and to take charge under the supervision of the physician and the mother of the child. They should wear a uniform, which should be repeatedly changed and washed. Their duties and pay should be definitely fixed. They should be enrolled by the authorities of the hospital in which they were trained, and if worthy they should be helped; but if they should prove to be unworthy, they should be immediately dropped from the roll. A competent nursery-maid should follow the trained nurse who cares for the mother during her confinement. The trained nurse, before leaving, can give such a nursery-maid useful hints in the care of the child, for each child differs somewhat in personal peculiarities.

The difficulty in obtaining proper nursery-maids is twofold. First, it is difficult to find suitable young women who are willing to do this work, because it is looked upon as domestic service. They prefer to become trained nurses or to go into shops and offices. When, however, the compensation given, the good home furnished, and the care which such a person generally receives are considered, it is readily seen that a successful nursery-maid

can save more money and live better in a year than many women who are employed in shops or offices. The second difficulty lies with those who employ them, and is a difficulty common with mistresses of all domestic servants. Employers are not always reliable and considerate, and do not respect the rights and privileges of those whom they employ. The successful nursery-maid becomes an intimate portion of the household, and must therefore be treated with the consideration which the delicate character of her duties properly performed deserves. We know of few hospitals in this country where such nursery-maids are trained. In each of the hospitals affording such training the rate of compensation which the nursery-maid shall receive during her first year in private work is fixed by the authorities; and those who employ them are requested to observe the fundamental regulations concerning the wearing of uniforms, as in the course in the hospital.

Nursery-Governesses.

As children grow older they require different mental care from that of infancy; and here the nursery-governess is desirable. Such a woman should be of sound health, kind and

affectionate in nature, and interested in children. She should speak the native language of the children correctly, and her voice and intonation should be gentle and pleasing. A knowledge of German or of French is exceedingly useful in such a person. An elementary knowledge of music is also advantageous. The nursery-governess should be able to teach the correct use of the child's native language, and if possible the use of German or French. If she has talent for drawing and can thereby help a child who has a bent in that direction, so much the better. But most important will be her example of correct and gentle deportment, her proper speech, and her intelligence and good sense in answering the many questions of childhood and in directing the child's inquisitive mind.

The Manners of the Nursery.

Deportment may easily be taught in a nursery where the child is uninterrupted by adults. It is far better for young children to take their meals in the nursery than with their parents. They should have their own table and service, which they will learn to thoroughly enjoy and in the use of which they readily acquire good table-manners. Their ambition to be with

their parents will stimulate and encourage them in learning to behave properly. Their meals can be made thoroughly enjoyable and interesting, and in this way their education can be imperceptibly begun.

It is sometimes urged against such treatment of children that the proper place for the child is with the parents, and that it should not be given into the custody of strangers. No watchful and intelligent mother gives her child into the care of strangers because she has a nursery-maid or a nursery-governess for it. She soon becomes aware of the character of the child's care-taker and she gives her child such companionship at proper times as to maintain the closest and most affectionate relations. The real motive of those who say that the child must be constantly with its parents is that the child shall amuse them; and, while a child may be a valuable instrument in educating and amusing parents, still it has rights of its own, and it should be allowed to develop itself as well as it possibly can. The results of a method of education which treats the child as an individual, with separate personal rights from those of the parents, are exceedingly good. It is not the common method of education, nor is it always

the cheapest, but in the acquirement of character, in learning discipline, in forming habits of judgment and reason, and in acquiring a foundation for useful knowledge it is far superior to any other.

CHAPTER VII.

THE HEALTHY CHILD.

It is important that the mother or care-taker should have a knowledge of the appearance and behavior of a healthy child, so that she may know when the child is manifesting symptoms of illness.

Color.

In estimating the color of a child, its natural complexion must not be forgotten. Pale children naturally do not have as bright a color as those who have a rosy complexion. There is, however, a pallor peculiar to disease, often spoken of as earthy, or sallow; and if this continue, it is an evidence of chronic ill health. Those parts of the face in which color is best estimated are the ears, the cheeks, the lips, and the eyelids.

The Flesh.

The size of the child is not so important as the condition of its flesh. A large, soft, flabby child may be far less healthy than a smaller child with firm, elastic flesh.

The Eyes.

An infant's eyes lack expression, and serve for little more than the reception of light. As the child grows older, its pupils should react readily to light, its eyes should be clear, but without a pearly and glistening brightness, and the lids should not be excessively thin and pale. There is no yellowish discharge from the eyes of healthy children. In cold weather a slight discharge of white mucus is frequent in the morning.

The Mouth.

The mouth of a healthy child is lined with pinkish membrane, and in several portions of the mouth there are pearly, grayish-looking bodies, which are not evidences of disease. The mucous membrane is soft and smooth, and is neither swollen nor shrunken. The covering of the infant's gums is practically the same in color as that of the other portions of the mouth, growing paler as the edge of the

gum is reached. The teeth are first seen as little lumps beneath the gum, and finally their edges appear as white spots or points through the gums.

The Tongue.

The child's tongue is pinkish, like the rest of its mouth, but very often slightly furred in the centre; and in children fed upon milk, after taking food, there is frequently a grayish sediment of milk upon the tongue. The tongue of the healthy child is moist and moves readily in the mouth.

Tongue-Tie.

Beneath the tongue there is a little band of tissue which limits somewhat the motion of the tongue, and which may cause apprehension lest the child be tongue-tied. It is very rarely that this band is sufficiently short to interfere with the child's health. If the child has habitual difficulty in nursing or taking its bottle, and cannot apply the tongue to the nipple sufficiently close to make efficient suction, the physician's attention should be drawn to it.

The Nose.

The child's nostrils should move gently during full respiration, and the nose should be

free from a discharge of mucus or pus. If the child cannot breathe through the nose, the attention of the physician must be called to such an abnormality. Healthy children must at all times be able to breathe without discomfort when the mouth is tightly shut.

The Abdomen.

The abdomen of the infant is considerably larger in proportion than other parts of its body. This excess in size diminishes as the child grows older; it is not an evidence of disease. The umbilicus, or navel, should be perfectly healed and should not protrude.

The Genital Organs.

The genital organs of children in both sexes should be free from redness and swelling, and there should be no obstacle to the passage of urine. A whitish or yellowish discharge from this region of the body is a sign of ill health.

The Back.

In observing the condition of the back it must be remembered that the spine is a movable column, and that unless the child is observed closely it is difficult to tell whether its back is practically straight or is not. There

should be no essential curve either to the right or to the left in a healthy child. The slight curve in the upper part of the back and that in the lower portion are natural, and are not evidences of disease. There should be no tumor in the spine and no point which is evidently painful on pressure or on motion.

The Limbs.

The limbs of a young child should be plump, the flesh firm in texture, the joints not painful upon motion or pressure, and the movements of the child perfectly unrestricted. The limbs of an infant are not perfectly straight, but have a slight outward curve; but the ankles should be straight, and even the arch of the foot should be formed in comparatively early life. The heel of the infant's foot is noticeably narrow in comparison with the breadth of its toes. This results largely from lack of injurious compression by bad-fitting shoes, and should be heeded in preparing shoes for children.

Posture and Attitude.

There is a wide difference between the posture and attitude of crippled children and the habitual position of those normally formed. The healthy child's attitudes are those sugges-

tive of comfort, and usually of health and vigor. The little child tries to raise itself from its bed and moves its back and limbs with freedom. When an injury occurs, the child rests the injured part by refusing to move the muscles which disturb it. Timid children who become frightened by an injury often keep a portion of the body almost immovable long after the original injury has ended. As a rule, the child's postures, whether sleeping or waking, are those best adapted to secure its comfort. It maintains very largely the bent or flexed position of its limbs and body which existed before its birth. In disease this position gives place to one indicative of pain or to the relaxation which sometimes accompanies severe disease.

Motions.

While a child's motions may seem at first aimless, it soon learns to do certain things with a definite purpose. In the first days of its life it often shows to a remarkable extent the prehensile characteristics of its four limbs. It endeavors to grasp with the toes as well as with the fingers, and does not develop the use of the toes because the feet are hindered by the wearing of shoes and stockings. Free motion is absolutely essential to the proper develop-

ment of a child, and no system of dressing should be allowed to interfere with this. The greater the child's vigor the more free and strong its motions, and the contrast between the unimpeded motions of a healthy child and the lack of motion in a child severely ill is most striking.

Nursing.

A healthy child can nurse without dropping the nipple to breathe or to cough. Should this not be possible, there is some disease or abnormality about the child which requires attention.

Swallowing.

A healthy child swallows without difficulty, and without coughing or gasping for breath. Should this not be possible, some obstacle to breathing is present which demands attention.

Sleep.

The healthy child sleeps with its mouth closed, its nostrils moving gently, and that portion of the body between the upper chest and the navel moving slightly but regularly. The child's limbs are usually bent, and its body slightly inclined forward. It is not readily aroused, although it occasionally moves

in its sleep. The skin should remain warm, but the child should not perspire while sleeping.

Bowel Movements.

The bowel movements of the healthy infant fed upon mother's milk are bright yellow in color, soft and smooth in consistence. A healthy child may have from one to three bowel movements in twenty-four hours. When the child is fed upon cow's milk, the stools are lighter in color, not so smooth or soft, and may frequently contain curded masses.

Urine.

In some cases the urine of the new-born child is practically colorless, and in many it leaves a brick-dust stain upon the diaper. This color should pass away in a few days; the child's urine should become entirely clear, and, as it grows older, of a light straw or yellow color. A very highly-colored urine, a dark-colored urine, or a urine absolutely without color indicate an unhealthy condition of the child.

Weight.

It is of the utmost importance that children should be weighed at regular intervals. The average healthy infant should be weighed

once weekly; but if the child is feeble, and especially if there is difficulty in its feeding, it should be weighed more frequently, as the physician directs. The weight should be kept in a record at home, and reported to the physician as he may desire.

Authorities agree that a healthy child during the first two months should gain from one-half to two-thirds of an ounce daily. This makes an average gain of four ounces weekly. The gain is somewhat proportionate to the weight of the child at birth, and a girl should gain as much as a boy. The weight of a child at birth is doubled at five months in healthy children, and becomes three times as great at fifteen months. The weight of a child at the end of one year should be doubled when it is seven years old, and the weight at that age should be doubled when it reaches puberty at fourteen years of age. Statistics show that at the end of one year a healthy child should be twenty-eight inches long and should weigh twenty pounds. This is the average weight, and variations may occur while health continues. During the second year a child gains about six pounds, during the third year about four and one-half pounds, and during the fourth year about four pounds. Children

grow more slowly in weight from the fifth to the eighth year, then more rapidly to the eleventh year, and from the eleventh to the thirteenth years girls gain faster than boys, and after this time boys increase more rapidly in weight than girls.

Correct Scales.

It is also important that proper scales be provided. A scale with a wicker receptacle or basket for weighing an infant is most convenient, and such can be procured sufficiently strong to weigh a child for the first few months of life. When the weight of the child exceeds the capacity of such a scale, there can be had what are termed bath-room scales, which will weigh accurately up to one and two hundred pounds. Scales used for weighing infants must indicate ounces and fractions of an ounce with accuracy. Scales used for older children need not weigh smaller quantities than one ounce.

An infant need not be divested of all its clothing while being weighed, but care should be taken to afterwards deduct the weight of the clothing. The child should invariably be weighed in the same clothing, as an accurate comparison is thereby obtained. We must

again urge the necessity for parents and nurses to co-operate with the physician by weighing children at regular intervals. There is no test so satisfactory regarding the success or failure of an infant's food and its general good health.

Conditions Influencing the Weight of a Child.

A child will sometimes gain steadily in weight, and then without apparent cause cease to grow heavier. A most frequent element in producing this cessation of weight is increase in length. Few children gain in weight while growing rapidly in length; and if a child is found to be increasing rapidly in length, it is quite a sufficient explanation for its failure to gain in weight. A healthy child properly fed does not lose in weight, and if it does not gain, its weight remains unimpaired.

Weight at Birth.

The average healthy infant weighs about seven pounds at birth. Male children weigh a little more than females. Frequently a well-nourished male child weighs eight pounds. Excessive development is sometimes seen in children, bringing the weight up to ten, twelve,

and even fourteen pounds, but such cases are exceedingly rare.

Length.

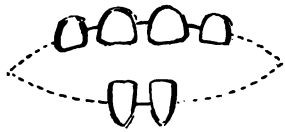
The average healthy child is twenty inches long at birth. This measurement is taken from the top of the head to the heel. During the first and second months the average increase is from one to two inches. From the third to the fifteenth month it is about half an inch. During the first year the child grows in length eight inches, which is its greatest increase in length. During the second and third years it grows from three to three and a half inches, and grows less than three inches during the next three years. In six years the original length is nearly doubled; in fourteen years the final length has been attained, lacking a very small fraction. Girls exceed boys in height at the twelfth and thirteenth years.

Dentition.

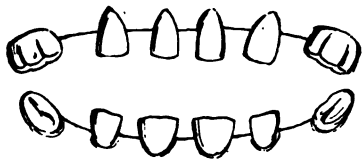
The appearance of teeth marks the physiological development of the child and is an indication of its general strength and nutrition. It must be remembered that the growth of teeth begins during the early period of intrauterine life, and that their appearance does not

FIG. 19.

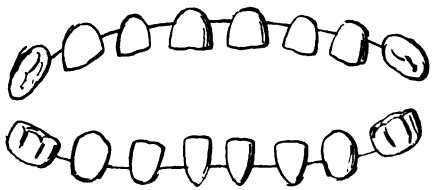
Appearance of mouth at about seventh month.



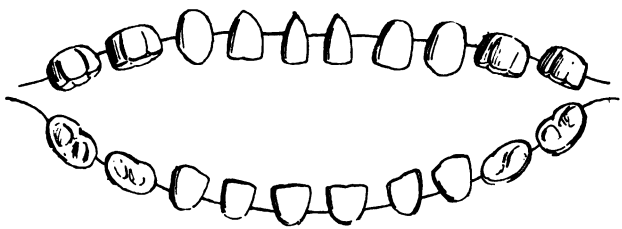
Appearance of mouth at about tenth month.



Appearance of mouth at about fifteenth month.



Appearance of mouth at about twenty-fourth month.



Appearance of mouth at about thirtieth month.

indicate a sudden formation, but is the result of gradual processes in the child's nutrition.

Teeth appear in groups and at various periods in the child's life. They are divided into the temporary, or, as they are sometimes called, "milk teeth," and the permanent teeth. The order of their appearance is variously stated by different students of the subject. The first to appear are the two lower central incisors, which come about the seventh month. Following these are the upper incisors, which appear during the first year. At fifteen months the two latter incisors and the four molars, which are in front, are usually visible. Between a year and a half and two years the four back teeth, or molars, make their way through the gum. It is thus seen that nature takes periods of three or four months for bringing the teeth through. The last eight of the twenty teeth come three months after the others, thus giving the child a chance to rest and to have its digestion well established after obtaining the greater portion of its first teeth. The child usually has six teeth when one year old, twelve teeth at eighteen months, sixteen teeth when two years old, and the full twenty when two and a half years old.

The Second or Permanent Teeth.

The earliest of these to come are the first molars. The remaining teeth of the permanent set appear in much the same order as the first teeth. They gradually encroach upon the blood supply of the temporary teeth, causing them to loosen and fall out.

Dentition and Development.

Considerable variations are not uncommon in the coming of teeth, and alarm should not be felt if teeth do not appear exactly in the usual order, so long as the child's general condition remains good. Variations in dentition must be reported to the child's doctor, and his examination will determine whether a change in the food is desirable, or whether some other details in the child's hygiene require alteration. It is much too common to ascribe the illness of children to the coming of teeth. During the period of development in which teeth appear children often have disturbance of the digestive organs, take cold easily, and are more liable to disease. In some children the coming of teeth causes acute nasal catarrh, cough, and general restlessness and irritability. In well-nourished children, with sound

and healthy nerves, teeth often come imperceptibly and without premonitory symptoms.

Indications for the Care of Children in the Various Periods of Development.

As the child passes through its various periods of development it is reasonable to believe that its food and general care should be varied in accordance with the growth of the body. It is evidently a mistake to give a child articles of food which require chewing before it has teeth of sufficient size to perform that function. As the teeth appear, the child being well nourished, its diet may be varied in accordance with its development. The most common mistake consists in giving the child solid food too early. As a result, indigestion and intestinal catarrh are set up which may lead to serious illness. The presence of teeth is only one indication for increasing the diet. The liquid diet of infancy should not be abandoned or interrupted except by the physician's direct instructions. His scrutiny and judgment are necessary to determine this and to indicate what shall be given in its stead.

Beginning a Mixed Diet.

Most physicians begin a mixed diet by teaching the child to drink milk from a cup

and to eat bread-and-butter. If this goes badly, the bread is broken into milk and made thoroughly soft, and thus given to the child. If the child is vigorous, and its teeth are large and strong, it may be allowed to bite a well-baked cracker or to suck and bite upon a chop bone or a chicken bone from which the loose splinters and bits of fibre have been carefully removed. As the child increases in development its diet is usually varied by the introduction of soft eggs, sponge cake, cooked fruit, soups and broths, junket, gruels, and a few selected vegetables. Meat and other heavy articles of food should not be given to a child without the express direction of its physician.

CHAPTER VIII.

THE CARE OF THE CHILD DURING ITS CRISES OF DEVELOPMENT.

WITH some children it is impossible to appreciate any definite period of change, as they pass insensibly from infancy through the various stages of development to puberty.

Other children, more sensitive and more easily excited, pass through disturbances which may be termed the "crises of development." They require especial care at such times.

The Care of the Child During Dentition.

The child's mouth should be cleansed daily with a saturated solution of boracic acid, pure water, or whatever cleansing substance its physician may direct. If the gums become swollen during dentition, especial precaution must be taken to keep the mouth clean. The utmost gentleness must be exercised in cleansing the child's mouth. While a spray will moisten the mouth thoroughly, it does not bring away excessive secretion; and as the child is too young to expectorate, such secretion is usually swallowed. To remove mucus from the mouth, the finger should be wrapped in soft, clean linen, dipped in pure water or in an antiseptic solution, and gently passed back over the child's tongue and around the sides and roof of the mouth. The motion should be from behind forward, thus removing mucus which may have collected in the posterior portion of the mouth. If this is done with gentleness the delicate membrane lining the mouth will not be injured; but if it be done roughly,

the child's mouth may be wounded and more harm than good result.

Cooling substances are especially grateful to most children during this time. If the linen be dipped in ice-water and the gum be gently rubbed it will often give great relief to the child. Physicians sometimes prescribe medicines to be rubbed upon the gums at the time the child's mouth is cleansed. In this way the irritation which the teeth set up may be considerably allayed. Many children find comfort in biting upon a smooth, hard object. An ivory ring is an ancient resource in most nurseries and is excellent for the purpose. The clean handle of a tooth-brush sometimes answers well. By gentle friction directed down upon the teeth with firm pressure, the child is often much relieved and the tooth assisted in its passage through the membrane which covers it.

If the child shows loss of appetite during dentition, it should not be urged to eat. For restlessness and irritability fresh air is the best remedy. Some children become constipated at this time, and others experience looseness of the bowels. Either condition should be reported to the child's doctor for appropriate treatment. A free flow of saliva

requires an abundant supply of bibs and clean handkerchiefs. The slight cough which some children have during teething is not serious, and usually requires no especial attention. In hot weather a teething child should be bathed as often as its comfort demands. It should be taken out of a city if possible and given the best general surroundings which can be procured.

Should the gums become intensely hard and swollen, or should the child grow stupid or very excitable, with twitching motion of its limbs, its physician should be summoned at once.

Beginning to Walk.

When the child's muscles are sufficiently advanced to enable it to raise its body from the bed or the floor it tries to walk. Some take pride in the early walking of a child, and hold it upon its feet and encourage it in its efforts to stand. If the child is heavy for its age this will injure its limbs, and may cause loose joints, weak ankles, and bending of the bones of the lower extremities. It is a safe rule to allow a child to do what it can without assistance; and if the child be placed upon a level surface, it may be allowed to get up as much as it desires. It should not be placed

in any apparatus which keeps it in an upright posture until it is strong enough to be upon its feet without injury. It is better for the child to walk late than to walk early, as it can always learn to go about, while injury to the limbs requires time for recovery.

The Development of the Senses.

So far as we know, the new-born child cannot perceive. Its eyes may receive waves of light, but it does not see in the ordinary sense of the term. Its eyes should be shaded from a strong light, because they are sensitive, and its visual powers should be allowed to develop slowly and gradually. When the child has learned to see, advantage may be taken of the fact to begin its education by surrounding it with objects of graceful form and proportion and by teaching it to distinguish between one or more objects and gradually to recognize color. In selecting toys or surroundings, the precaution must be taken to avoid dyestuffs and color materials which are poisonous. Bright greens are especially dangerous in wall-paper or otherwise used, because of the arsenic which they contain. Painted toys are also injurious, because the child may suck off the paint in putting objects

into its mouth. It is impossible to tell just when a child begins to perceive or to distinguish between one and several objects.

Perception of sound is probably present earlier than visual power, and although sounds are not critically distinguished, the child soon learns to recognize its mother's voice and to distinguish pleasing from terrifying noises. Melody is appreciated by very young children, as is shown by the familiar use of the cradle-song.

The sense of taste, as a reflex only, is present before the child's birth. The food of an infant is usually so bland in character that the element of taste need not be considered. Cows at pasture sometimes eat herbs and weeds, such as garlic, which give to the milk an objectionable taste. Should an artificially-fed child refuse its bottle, this cause must be kept in mind in investigating its apparent lack of appetite.

The senses of touch and smell do not seem to be present in young children in any appreciable form. The prehensile power of the child must not be confused with the sense of touch, for the former is a reflex act only, while touch is a much more highly developed attribute. The temperature sense of the child,

which is closely allied to touch, is early developed, and it forms a valuable index to the child's comfort and general condition.

In caring for a child while the various senses are developing, pains should be taken not to subject it to a sudden or violent impression upon any one of its senses. Very strong light should not be thrown upon its eyes; it should not be exposed to loud and sudden noises. Pungent substances or powerful odors should be kept from the child. Extremes of heat or cold and violent disturbance of the child's nervous system should be avoided. The child's senses may be stimulated in the beginning of its education by giving it well-proportioned objects to look upon and by allowing it to hear only modulated sounds, thereby developing its understanding in a normal and proper manner.

The Airing of the Child.

It was formerly thought that a child must be of a certain age before it could be taken out and given fresh air. This constituted one of the epochs in its development. At present we are so convinced of the value of fresh air for children that we do not limit the going out of a child to a certain period of develop-

ment, but, in accordance with the climate, give it fresh air from the first few weeks following its birth. The manner of its airing must depend upon the temperature, the direction and velocity of the wind, the presence or absence of sunshine, and the facilities at the disposal of the parent or care-taker.

Puberty.

In this country the average age of puberty in both sexes is from thirteen to fifteen years. The importance of this crisis in the development of both boys and girls is often not appreciated. Each alike should be relieved from continuous mental strain and should as much as possible lead simple and healthful lives in the open air. In proportion to the intelligence of the child, its parents should inform it of the changes which are going on in its body, and teach it to care for itself properly at this time. Children should be examined—if this has not previously been done—to see that no abnormalities of the generative organs exist which might give rise to irritation. The general health should be kept in the best possible condition, and any abnormality should be reported at once to the child's physician. The associations of the child should be closely

scrutinized, and it should be removed from all improper influences.

Education During Crises of Development.

Theoretical considerations in education should be absolutely abandoned for the physiological needs of the growing child. Its best education is not obtained in schools or necessarily from books. Its parents and care-takers should be its educators, and if they are inefficient, its advancement will be retarded. The constant temptation is to overtax the child's power of memory. Memory depends upon the vital condition of the general nervous system. It is not a function of the brain alone, as many suppose. The child's nerves, like other parts of its body, are delicate and sensitive, and it can absorb impressions with great rapidity. Hence the constant temptation is to thrust impressions upon it and to have it learn by imitation a mass of things whose meaning it does not understand.

At puberty education should be made secondary to the child's health for several years. Boys or girls, should they be delicate, are best out of school leading lives of healthy play in the open air and using their minds in such ways as the conditions of their bodies

dictate. It is quite enough for a child to read interesting books or to attend to minor things during this period. No requirement of school competition or of class standing should be allowed to interfere. With those who can do so, it is sometimes advantageous to change the child during this period to an equable climate where it can be in the open air during the greater portion of the day.

During puberty girls should receive especial attention. Desire for rest should bring to them abundant repose. Digestive disturbances or anæmia should receive the physician's attention, and the nervous sensitiveness which often occurs at this time should be soothed by the companionship of the mother. It is much better for the child to have no fixed and definite tasks, unless they occasion no strain and are a source of positive pleasure. The mother should tell the child as much about menstruation as will impress upon her mind the necessity for taking care of herself, and should also instruct her carefully how this is to be done. The foundation for good or bad health is laid in many cases at this time; and health is so important for happiness that all else should give way before it.

Puberty and the few years following are

most important periods in the development of womanhood. Constricting clothing applied to the girl at this period of life causes uterine displacements, failures in development, and lays the foundation for permanent ill health. The mother of the girl must choose deliberately between fashion and health. It does not follow that because she declines to use constricting clothing her child will be unshapely and unattractive in appearance from an artistic sense. By adopting a system of dress which supports the clothing from the shoulders, which leaves the waist absolutely without constriction, and which selects apparel in accordance with the child's personal peculiarities, she may be properly and attractively clothed, while still retaining good health. It is a question for the mother to determine whether she will consult her child's most important and best interests, or whether she will accept the dictates of those who are unwilling to differ from the majority.

Moral Development During Crises of Growth.

Parents must remember that during the epochs of development the sensitive condition of the child's nervous system makes it emotional and often brings out in exaggeration

traits of character. In some children excessive sensitiveness leads to fear; and if the child be bullied by a bad nurse, it speedily learns to lie and to cheat. As puberty approaches, the development of the generative organs and the child's natural curiosity make it a fit subject for impure suggestions. It is evident that the moral and physical are so closely combined in development that they cannot be separated. Whatever may be our views regarding the development of the moral nature, one fact remains without question, that sound, healthy physical development is a great aid in moral growth. Parents and care-takers in securing good health for children are thus laying a foundation for the development of sound character.

CHAPTER IX.

THE SIGNS OF ILLNESS IN CHILDREN.

THOSE who are accustomed to observe children will detect signs and symptoms of illness, although the child cannot accurately describe its sufferings.

Color of the Skin.

The child's natural color must be taken into account in considering whether it be flushed or pallid when ill. A great variation from its natural color, either in flushing or in pallor, is an evidence of disease. The more acute the disease the more sudden and pronounced is the variation from the normal color. Fever may be present when a child is pale, and is usually present when the child is flushed.

Sallow or earthen color, yellow complexion, and a dusky or leaden color are also signs of disease.

Eruptions.

An eruption or breaking out upon the skin may be evidence of a trifling disturbance of health or it may be a sign of severe infection. Hot weather which develops quickly, indigestible food, and great nervous disturbances cause eruptions which are indications of the general state of the child's health. Infectious diseases, such as scarlet fever, measles, and the like, are accompanied by eruptions. Dyestuffs used in clothing may cause eruptions which resemble those of disease, while the bites of insects and the effects of poison-ivy are familiar. In estimating whether an erup-

tion is a serious symptom or not, it must first be considered whether the child has been exposed to an apparent cause. If a child has been exposed to mosquitoes, mosquito bites are the natural consequence, and therefore not evidence of a serious illness. If the child has been playing with an animal infested with parasites, it is not strange that it should show blotches caused by such parasites. If a child is too warmly dressed, as is very often the case in mild weather, an eruption is to be expected. If a child eats indigestible food in warm weather, it is not strange that it should have a breaking out. When, however, an eruption is accompanied by depression, or by great restlessness and fever, it is a symptom of importance, and the child's physician should be summoned at once.

Eruptions Caused by Parasites.

The itch insect causes an eruption resulting from the presence of a parasite which burrows beneath the skin. Ringworm may be derived from kittens or from dogs, and causes a circular red eruption which is characteristic. Other eruptions are derived from parasites occasionally obtained in food or in articles handled by a child.

Chronic Eruptions.

When a child has a roughness and redness of the skin which does not disappear, but remains and increases, it is a symptom demanding attention. What is commonly known as salt rheum, properly termed eczema, is a condition of this sort. It is not uncommon in badly-fed children to see a chronic eruption of pimples, and in some cases these become of considerable size, dark in color, and accompanied by thickening of the skin. These are evidences of an unhealthy condition of the intestines and a sluggish action of the skin.

Fever.

Fever is usually present in illness occurring in children. The degree of fever may be estimated by its effect upon the child. If the child is stupid, dull, and evidently depressed, or if it be delirious and highly excitable, with flushed face and hot skin, the fever is high. Occasionally the fever is high although the skin is pale instead of being flushed. Fever is easily excited in children, and usually yields promptly to proper treatment. If the physician desires, the mother may procure a suitable thermometer and learn to take the child's

temperature. This should not be done, however, unless requested by the physician in charge of the child.

The Pulse and Heart Action.

The pulse and heart action of children are more rapid than those of adults in good health. It is almost impossible to count the pulse of a little child, and a person not familiar with children would readily imagine that serious illness was present when such was not the case. If the hand be placed over the heart of a little child, it will be found to beat very quickly, although the child may be perfectly well. When severe illness is present the pulse cannot be counted and the heart-beat is very quick and disturbed.

The Breathing in Health and Disease.

We have already called attention to the breathing of the healthy child. The mouth is closed and the abdomen and lower portion of the chest move gently and regularly. When disease is present, the mouth is partially or wholly open, the nostrils are widely dilated, and the chest and abdomen move in a labored manner; the more severe the disease, the more disturbed the breathing. This is especially true

in diseases of the lungs, when the breathing may be exceedingly labored. It is not so much the rapidity of breathing as it is the evident labor of respiration which denotes disease of the lungs.

Vomiting.

Many diseases are ushered in by vomiting. Indigestible and irritating food cause vomiting. Fear, emotion, and excessive nervousness in some children produce vomiting. The emptying of the stomach is a symptom only, and not a disease, and should be reported to the child's physician as a symptom. We have previously drawn attention to the difference in milk-fed children between regurgitation and vomiting.

Diarrhoea and Constipation.

Very frequent bowel movements constitute diarrhœa and indicate disease. A child may remain in good health having two or three movements in twenty-four hours, but more frequent movements indicate disease.

Constipation is a relative term, and usually means failure to have one movement of the bowels in twenty-four hours. It is possible for a child to remain in good health whose bowels do not move daily, but it is exceedingly

unusual, and the failure to secure a daily movement should be reported to the physician.

The Character of Bowel Movements.

Bowel movements vary from the soft, bright yellow movements of infants to the darker movements of older children. In disease the bowel movements become thin in consistence, offensive in odor, and the color may be green, blackish brown, clay, coffee-ground, and reddish or bloody in color. In diseases of the intestines the bowels frequently contain mucus, and sometimes blood and pus. Curds of milk must not be confounded with mucus, although both are frequently present at the same time. Liquid stools of grayish or yellowish fluid are present in some cases of severe and prolonged intestinal disease. Chronic distention of the bowels with gas is present in diseases of the intestines, and is a symptom not to be neglected. In severe cases distention may proceed to such a point as to seriously interfere with breathing and threaten the life of the child.

The Urine.

In infancy the urine is colorless and abundant in quantity. As the child grows older the urine becomes darker in color, and in case

of acute disease may be dark yellow or reddish, with an abundant brick-dust sediment. It is very difficult to measure the quantity passed by a little child in twenty-four hours. Should the urine be scanty, or highly colored, or offensive in odor, or contain a trace of blood, the occurrence should be at once reported to the child's physician. In very young children the stain which the urine makes upon the diaper should be noted, as it gives some indication of the condition and composition of the urine.

The Child's Expressions of Disease.

Although little children cannot tell in words what is the matter with them, their cries and their actions give to those who understand them very important information. The mother or care-taker soon learns to distinguish between the cry of hunger and that of irritation or anger. Each of these cries is loud and vigorous, and is soon appeased. In some forms of disease the child's cry becomes shrieking, explosive, and almost maniacal, while in chronic and more serious disease the cry ceases to be vigorous, and gradually subsides into a moan or constant ejaculation, which is very significant and distressing.

The child tells by its postures and attitudes more than by its voice. A sensitive joint or a painful limb is held as quietly as possible. The child is afraid to move it; and if it be moved by another, motion is resisted and the child cries with pain. If there is acute pain and inflammation in the abdomen, the child lies in such posture as to keep the abdominal muscles as still as possible and resists motion with its lower limbs. In some forms of disease of the nervous system the child arches its body strongly backward, contracting the muscles of the trunk to bend the spine strongly in this direction. In severe disease the eyes are turned in unnatural positions, the expression of the face is altered, and the child's demeanor is so different from that of health that no trouble is experienced in recognizing the presence of disease.

The Signs of Chronic Disease.

A sickness which becomes apparent suddenly with pronounced symptoms is easily recognized. It is just as important to detect an illness developing slowly whose consequences may be quite as serious. Among the signs of chronic illness which should be recognized by the child's care-takers are progressive

loss of weight, progressive failure of strength, the persistence of unnatural bowel movements, failure in appetite, and an irritable and excitable condition of the nervous system, or an apathetic and indifferent state. When these conditions are present, developing gradually but steadily, the child is chronically ill.

CHAPTER X.

NURSING SICK CHILDREN.

Shall the Mother Nurse the Child?

In cases of illness the question often arises, Shall the mother nurse the child, or shall a trained nurse be summoned? The answer to this question will depend upon the circumstances of the case. Sick children require constant attention and observation. No one person can give this for any length of time without intermission, and hence whoever assumes the care of the child must have help. If the mother is excitable and apprehensive, her presence is often a positive detriment to the child. The child is more easily managed and is less excitable during her absence. On

the other hand, there are often times during the illness of children when the mother's attention is most grateful and soothing. All trained nurses do not succeed in caring for children. Great patience and tact and a genuine and affectionate interest in the child's recovery are required. The physical strain is such that frail or old women cannot successfully nurse sick children, and such persons should not be selected for this duty. The influence of a young and strong nurse is especially good upon such patients. In our observation the best results are obtained by a good nurse and a sensible mother, a combination not always easy to secure. The nurse should be given charge of the case, acting under written orders from the physician and representing him in his absence. If she has tact and sympathy, she will utilize the mother's help by allowing her to exercise her affection for the child and to give it the comfort of a mother's love. In severe and critical illness, whenever possible, two nurses should be employed. These nurses should so arrange their hours that both will be present at the doctor's morning and evening visits. They can relieve each other in such a way as to secure needed rest, and can so help each other that manipulation

and work about the child shall be done in the best and most comfortable manner.

If trained nurses cannot be procured, a sick child is better off in a suitable hospital than in its home. If this is not allowed, then the mother must do her best and secure such help as is available.

Nursing in Diseases of the Digestive Tract.

A large proportion of children's diseases are those of the digestive organs, and mothers should be familiar with the essentials of care in these cases. The entrance of germs in impure food is the usual origin of such disease. Hence the first indication lies in keeping from the child impure food and infected water. If it is suspected that bad milk has caused the trouble, the child should not be given milk. It may be nourished with albumin water and broths until the doctor permits other food. The water which a child ill with digestive disease takes should be pure; and if doubt exists regarding the water available, it should be filtered and boiled. In such cases the discharges from the bowels and also the urine may contain poisonous germs. If possible, such discharges should be received upon cheap material, like cheese-cloth, which can be

FIG. 20.

Irrigating the bowel.

burned when soiled. If this cannot be done, the diapers should be boiled and thoroughly dried before using again. The child's body about the opening of the bowel should be kept as clean as possible; and as the discharges are frequently irritating, vaseline should be used to prevent wounding of the skin. In these cases the child is exceedingly thirsty, and an abundance of water should be given. Sponging with tepid or cool water, or with alcohol and water, is most acceptable in these cases. If the disease be prolonged, the child's mouth becomes foul and sometimes offensive, and should be cleansed as often as necessary. The mother should keep an account of the bowel movements and should save the napkins for the doctor's inspection. She should also notice whether the child vomits, and keep a record of the number of ounces of food and of water which the child takes.

Physicians often prescribe in these cases washing out of the bowel by a soft rubber catheter and fountain syringe. (Fig. 20.) This is done by placing the child upon its abdomen across the mother's knee,—having filled a fountain syringe with the warm solution ordered by the doctor,—allowing the solution to run, and inserting the soft rubber catheter, well oiled,

with a gentle rotary motion, then pushing it as far as it will go into the child's bowel. The child will first make an effort to expel the catheter; but if it be held in place, it can finally be pushed past the point of obstruction and into the bowel. At least two quarts of fluid should be used as often as the doctor directs.

In diseases of the digestive organs especial skill and care are needed in preparing the child's food. The mother or nurse must understand cooking thoroughly, and thus be able to take advantage of any sort of nutritious matter which the child can assimilate. The question of recovery often depends not upon medicines, but upon finding some sort of nutritious material which the child can take.

Nursing in Diseases of the Respiratory Organs.

As in diseases of the digestive organs, many affections of the throat and lungs are caused by the entrance of poisonous germs. Diphtheria and tonsillitis are familiar examples of infection of the throat, while influenza, bronchitis, and pneumonia are examples of infection of the lungs.

In nursing these cases it is especially important that the child be given a free supply of fresh air. All such cases should be kept

in a room ventilated by an open fire. The heat from a furnace flue is the worst possible method of warming a room for such a patient. An open stove, burning coal, is excellent. Except in severe weather, a window in the room should be kept partially open, and the child protected from direct draft by a screen.

External applications are often employed in these cases. The chest and throat are rubbed with camphorated oil or some other medicine prescribed by the physician, and compresses and packs are applied to the chest. A cold compress upon the throat is frequently used, and is a most efficient method of treatment. The best material for compresses is soft flannel. Compresses should not be covered by oiled silk or rubber, but should be allowed to dry as rapidly as the heat of the part will permit. They should be renewed as soon as dry. The doctor will prescribe the temperature of the water from which the compresses are to be wrung. Packs for the chest are made in the same manner, the flannel being sufficiently large to extend from the child's neck to the umbilicus. They are wrung out of water at the temperature ordered, wrapped completely about the chest, and a thin, dry flannel placed over them. The indi-

cations for using them are given definitely by the physician in charge. Medicines may be added to the water out of which the compress is wrung.

For use in disorders of the throat and lungs an artificial atmosphere containing medicated vapor is manufactured. A kettle containing a boiling solution of medicine may be employed, throwing a vapor into the atmosphere of the room or into the child's crib. In some cases the crib is covered by a tent formed with blankets and the vapor thrown into it. (Fig. 21.) Many of the kettles employed for this purpose are heated by alcohol lamps, and especial precautions must be taken lest the alcohol overflow and set fire to surrounding objects. Occasionally a patient is burned in an accident of that kind.

In some disorders of the respiratory organs, such as croup, it may be desirable to produce free vomiting promptly. The physician will prescribe such remedies as may be given internally, and their action may be aided by holding the child with its head considerably lower than its hips, and then inserting the finger into the mouth and irritating the throat as far down as possible. If the child's forehead be supported by the other hand of the nurse, its tongue will

FIG. 21.

Crib made into a tent by blankets and poles, and croup kettle in position.

drop forward and it will readily empty its stomach.

In diseases of the respiratory organs the inhalation of oxygen is sometimes employed, and it should be given as the doctor directs. The apparatus is simple and can be readily used by a careful person. It is of the utmost importance that the child have most nourishing food at frequent intervals and also stimulus. The ingenuity of both the mother and the nurse will often be taxed to feed it and give it stimulus successfully. In some cases mustard-baths are given at the temperature prescribed by the physician. Sufficient mustard is put into the water to make it taste distinctly. The child is placed in the bath and its chest briskly rubbed until the body is red. It is then removed quickly, dried with flannel, and, if the fever be high and it is in accordance with the doctor's orders, a pack is placed about the chest. In using this method of treatment, the doctor's orders must be very strictly followed, and he will prescribe in detail the indications for using the bath and the method by which it is to be given.

In diseases of the respiratory organs the mother and the nurse must remember that matter ejected from the mouth is often infec-

tious. Such a child must not be kissed upon the mouth, and mucus expelled from the mouth and nose should be received on bits of old linen or cheese-cloth which can be burned. The lips and nostrils often become distressingly sore in these cases and should be protected by vaseline or cold cream.

Nursing in Diseases of the Nervous System.

The nerves of young children are so sensitive that any severe illness produces considerable disturbance. Fortunately, disease of the brain and nerves is much less frequent than that of other organs of the body. Many diseases formerly thought to attack the brain are now known to be those of the lungs or digestive organs, producing disturbances of the brain and nerves. In illness attacking the brain and nerves absolute quiet is essential for the patient. Sun and light must often be shut out as much as possible. External applications of cold by ice-bags are frequently employed, and in using them care must be taken that the ice-bags do not leak. One layer of thin, dry flannel between the ice-bag and the skin makes the application much more endurable. Some prefer to cover the rubber bag with flannel before applying it. In addition to

the child's medicines, it must often be fed without its active co-operation. In some of these cases the child does not swallow, and prepared food must be inserted into the bowel. Medicines are sometimes rubbed into the skin in the form of ointments, and in chronic cases electricity is frequently applied to the child's back and limbs.

A distressing feature in these cases is the delirium and crying which the child exhibits. The parents may fortunately remember that the child is not completely conscious during such illness. Its real suffering must be less than its symptoms indicate.

In long-continued disease of the nervous system the pressure of the child's body upon the bed may cause the skin to become sore. Especial attention must be given to the skin at such points,—bathing with alcohol, applying pads to relieve pressure, and turning the child frequently into various postures.

The Nursing of Chronic Diseases.

We sometimes see cases in which active symptoms subside but the child's recovery lingers. In some cases there seems to be no one organ at fault, but the child does not regain strength or become well nourished. The

care of such patients taxes the strength and resources of the mother and the nurse exceedingly. The utmost patience and a strong affectionate interest in the child's welfare are required to continue its care. It is a great help for the mother if she will train herself to expect no rapid advance in the case from day to day, and will content herself in doing her duty and in diverting her mind as much as possible from the wearing features of the case. If she will review the progress of the child at intervals of a week or ten days, she will usually find evidence of some improvement.

CHAPTER XI.

INFECTIOUS AND CONTAGIOUS DISEASES.

Shall Children be Deliberately Exposed to Infection and Contagion?

It is a familiar fact that certain infectious and contagious diseases are constantly present among human beings. Measles, scarlatina, chicken-pox, mumps, and diphtheria are especially apt to attack children. If a slight epidemic of one of these disorders is prevalent,

and if the weather be mild and favorable, parents will sometimes raise the question, Shall a child be deliberately exposed in order that it may have the disease under the most advantageous conditions and with the least danger? If we could assert positively that a child would have a mild attack of a given infection under certain conditions, it might be justifiable to allow a child to pass through an epidemic infection, and thus avoid the possibility of a more severe illness at another time. Unfortunately, we cannot foretell absolutely from the character of an epidemic or from the surrounding circumstances that a given case will be a mild one. Hence it is unjustifiable, in our belief, to expose a child deliberately to any contagious or infectious malady.

On the other hand, it is unwise to attempt to escape these diseases. While due precaution should always be taken to avoid illness, yet at the same time it is absolutely impossible in most cases to keep a child from the risk of contagion.

Methods by which Contagion and Infection are Conveyed.

By contagion we understand the transference of the active poison or principle of a

disease by touch. Thus, books and toys which have been used by children suffering from scarlatina are contagious to those who have not had the disease. An infectious disorder is one due to a particular poison whose transference cannot always be proved, but often depends upon touch or contact. Mumps is probably contagious, and is certainly infectious, but we cannot distinctly recognize the manner in which the infection is conveyed. In general, however, we may say that in both infectious and contagious diseases the objects used by a person having the disease, such as toys, drinking-glasses, bedding, and toilet articles, may convey the germs of the disease. The air breathed out by a person having such a disease is especially apt to contain these germs. The discharges from the body of such a patient should be considered as containing the poison causing the disease. Under these circumstances, we can readily understand the conveyance of scarlatina by books, toys, or clothing; the fact that measles seems to spread principally by the expired air from the patient and by the catarrhal secretions of these cases; that diphtheria and other disorders of a like nature may be transferred by drinking-glasses, handkerchiefs, and towels, or by something

which has been used by or in proximity with the patient.

Articles used in food may convey contagion and infection. Scarlatina has been carried in milk, tuberculosis in milk and meat, while the germs of typhoid fever are usually conveyed by water.

The Avoidance of Infection and Contagion.

The principal sources of infection and contagion are public conveyances, schools, churches, theatres, and crowds of persons. In cities, the parks and squares frequented by children serve as depots of distribution for contagious diseases. As few public buildings and vehicles are properly ventilated, the medium of contagion is usually the air expired in such places by those having a contagious disease or recovering from it.

The Symptoms of Infection or Contagion.

As these disorders are caused by a living poison, the symptoms announcing the reception of this poison are primarily disturbances of the nervous system. The nerves which regulate the temperature of the body are most often disturbed. A chill followed by fever ushers in many of these disorders. The nerves

regulating the action of the heart are disturbed, the pulse is usually fast, and often the stomach is unsettled, and vomiting happens. Severe headache is frequently present. These symptoms should cause the parent or care-taker to summon the physician at once. They are invariably of sufficient importance to demand a medical examination. In severe cases the amount of poison introduced into the body may be so large as to overwhelm the nervous system. With these patients the temperature may not be raised, but may be lower than normal, the pulse is weakened. and the patient is apathetic, restless, and evidently oppressed.

The Eruptions from Infection or Contagion.

While the infectious and contagious diseases are usually accompanied by eruptions, much experience is required to recognize the various eruptions and to decide which of these disorders is present. Amateur practitioners of medicine often come to grief in diagnosticating infectious or contagious diseases. Hence those who care for the child should not wait for an eruption to appear and should not take the responsibility of deciding, from the presence or absence of eruption, whether the child is or is not sick. So soon as the general

symptoms described are present, the child's physician should be summoned. In exceptional cases infection is so mild that the child is apparently not disturbed. Sooner or later some pronounced disturbance occurs in the general health which calls attention to the existing condition.

Isolation.

When a child has been declared to have an infectious or contagious disease, it should be isolated. If several children be exposed at the same time, it does not follow that all will become infected. Hence the one proven to be infected should be immediately removed from the others. If possible, the upper rooms or floor of the house should be selected for this purpose, with a separate bath-room and with an abundant exposure to sunshine. If a trained nurse is not in attendance, some member of the family who can leave other duties must take charge of the case. The carpet and superfluous hangings and all unnecessary furniture should be removed from the selected room before the patient is taken to it. An open fire of some kind is especially desirable, excepting in very warm weather. Old linen should be selected for the case, and the toys and books used should be chosen

with a view to their future destruction. The linen from such a case should not be washed with that of the other members of the family. Separate dishes and cooking-utensils should be employed. Communication with other persons should be by conversation from the upper to the lower stories, and if possible should not be in writing. This isolation must be maintained until the patient is convalescent and has been thoroughly disinfected.

General Nursing in Infectious Cases.

Experience has shown that if a patient suffering from an infection be put at rest and be well fed and given needed stimulus, the cells of the body destroy the poisonous germs and the patient recovers. There is no reliable testimony that any form of medicine or drug can be swallowed in sufficient quantity to destroy infectious germs. Hence the feeding and general nursing of contagious diseases are most important. As various symptoms develop, the patient must be made as comfortable as possible under the circumstances. The eruption often seen in these cases apparently results from the effort of nature to expel through the skin the poisonous bacteria. In many cases, after a few days' sharp illness, the

patient is much better and remains comfortable during his convalescence. In severe cases the skin does not succeed in casting off the poison, the patient's nervous system becomes profoundly depressed, and a fatal issue may result. The occurrence of excessive fever calls for sponging and bathing under the doctor's orders. Depression and prostration require stimulus. Excessive excitement or delirium requires constant and soothing care to avoid the exhaustion which often follows.

CHAPTER XII.

THE CONVEYANCE OF CONTAGION AND INFECTION.

CONTAGION and infection are usually conveyed by direct contact with a diseased person. While touch is the immediate cause of most contagion, polluted air may also convey disease germs, and articles used by persons having contagious diseases very frequently carry the disorder. Diseases differ in the manner in which the contagion is spread. Thus in scarlatina touch seems the usual and

most important method of conveyance. In measles the contagion travels through the atmosphere, one case will practically infect an entire building, and it is often impossible to control the spread of the disease. At other times a child may associate for several days with its brother or sister ill with the measles without taking the disease. It is probable that diphtheria is conveyed by actual contact with the patient and also through polluted air. Fluids may convey the germs of diphtheria, scarlatina, typhoid, and other contagious disorders. While we may not have positive knowledge regarding the precise method of conveying contagion, we know sufficient to assist us in preventing contagion in many cases. One of the most remarkable diseases of modern times, influenza, or grippe, is conveyed by methods at present unknown. It has its origin in the filth centres of Asia, and is scattered throughout the world by pilgrims who visit shrines in that country. It is probably conveyed by the atmosphere, and also by vessels, railway-cars, and other agents of transportation. Success in protecting a household from infection by one of its members will depend somewhat upon the nature of the infection. In scarlatina, a sick child, if completely iso-

lated, may pass through the disease and no other member of the family be attacked. It seems possible to control the contagion of scarlatina successfully.

Another factor in determining the spread of contagion lies in the time of illness at which exposure takes place. It has been thought that diseases accompanied by eruption are most contagious when the eruption is in full development. Others believe that the period of desquamation, when the skin is shedding its scales, is more apt to favor contagion.

Disinfection of the Patient.

It is of the utmost importance that every precaution be taken to protect others from contagious and infectious diseases. When convalesence is fully established, before breaking up the isolation and quarantine, the patient must be subjected to as thorough a disinfection as possible. In diseases accompanied by desquamation the use of a simple fat, with rubbing, followed by thorough washing with soap and warm water, will remove the débris from the skin which is often infectious. Antiseptic baths are prescribed by physicians when the patient is ready to leave the sick-room. Such are bichloride of mercury in solution of

from 1–5000 to 1–10,000, carbolic acid in one per cent. solution, and lysol or creolin in the same solution. As these baths are made with poisonous substances, they should not be used without the doctor's direct order, and he should give specific directions as to the strength of the solution and the temperature employed. With children it is comparatively easy to cleanse the hair and scalp. As the hair frequently comes out in severe cases, it is better to cut it close and thoroughly wash and shampoo the scalp. An abundant growth of new hair will come in. It is important to remember that discharges from the body may be contagious for some time after the patient becomes convalescent. Thus, after measles and whooping-cough the mucous discharge from the throat and nose may convey contagion. The bacillus of typhoid infection is sometimes present in the urine and feces when the patient is apparently well. The germ of diphtheria has been found in the throat of patients in apparent good health. Every precaution should be taken to examine the discharges from the infected portion of the body before the patient is allowed to mingle freely with others.

Disinfection of Clothing, Bedding, Utensils, etc.

The most efficient and simple method of disinfecting fabrics is by boiling. As this ruins many articles, a less destructive method has been found in fumigation. To be effectual, this must be thoroughly and carefully done and a disinfecting agent of known efficiency must be selected. If a trained nurse has not been employed to care for the patient, it is well to have the disinfection of the room and its contents done by the officials of a Board of Health or by some one procured from a hospital for this purpose. Disinfection by fumigation is done by sealing the room tightly, after unfolding and arranging the articles within it so that the fumigating vapor can penetrate them and setting free in the room a disinfecting and germicidal vapor. Formerly the vapor of sulphur was universally employed. This was secured by burning sulphur in a tin or iron vessel over an alcohol lamp placed upon tin or iron or upon bricks in the centre of the room. A more efficient method consists in the use of the vapor of formaldehyde. This substance is prepared in tablets or pastiles, and may be burned with a lamp constructed for the purpose as follows: The

formaldehyde lamp is placed upon several bricks in the centre of a deep tin or iron vessel, like a large dish-pan. Into the pan is put sufficient water to come as near the lamp as possible. At the upper portion of the lamp there is a cup filled with formaldehyde pastiles, and a little alcohol is poured over them. The lamp at the bottom of the apparatus is filled with alcohol and its wicks trimmed and lighted. When the room and lamp are ready, a match is applied to the pastiles in the cup of the lamp. A vapor is instantly set free, and the person who is conducting the fumigation is obliged to leave the room as soon as possible. The door is tightly closed, calked with cotton, and paper pasted over the cracks. The lamp is allowed to burn out, consuming the pastiles within the cup. By experience the length of time necessary to consume the formaldehyde is ascertained, and at the end of this time the room is opened and aired. (Fig. 22.)

Formaldehyde vapor does not injure colors in clothing or other objects, and is most efficient in destroying bacteria. It is intensely irritating to the eyes, nose, throat, and lungs; and should leakage occur from the room, those in the house will experience great annoyance

FIG. 22.

Formaldehyde lamp prepared for disinfecting a room. The lamp stands upon bricks placed in a large pan containing several inches of water.

and irritation. To stop a room tightly, cracks should be plugged with cotton batting, the fireplace boarded up temporarily and paper pasted over the boards, key-holes plugged with cotton, cracks about the windows likewise plugged, and paper pasted over cracks and apertures of every kind. Twenty-four hours is required for successful fumigation, after which time the doors and windows of the room should be left widely open for another twenty-four or forty-eight hours. After the room has been aired it should be thoroughly scrubbed with strong soap and hot water, and then with a carbolic acid or bichloride of mercury solution. In rooms which have been papered it is safest to remove the paper and to replace it by new. Fresh calcimine upon the ceiling is also an advantage. In rooms with painted walls and ceiling fumigation and thorough scrubbing are sufficient.

While it is true that fumigation thoroughly cleanses toys, books, and other articles subjected to formaldehyde vapor, it is safer to destroy cheap articles rather than to run a possible risk of further infection. Articles which can be boiled should be subjected to this method of cleansing in addition to other precautions.

CHAPTER XIII.

MEDICAL EMERGENCIES.

SUDDEN illness sometimes arises which demands attention as soon as possible, often before a physician can be summoned.

Poisoning.

Poisonous substances are readily swallowed by children during the period of dentition. The irritation produced by the teeth leads the child to put every available object into its mouth. Poisons may be divided for this consideration into two classes,—those which act locally and those which act upon the body generally. A familiar example of a local poisoning is lye. Strong alkalies or lye in solution are used in cleaning kitchen sinks, drains, and woodwork, and in making soap. If a child drinks lye, little of it reaches the stomach. It irritates the throat so violently that the child usually ejects the poison before it is swallowed. Upon the throat the action of lye is most destructive. A profound and active inflammation is at once excited, and the tissues of the

child's throat are destroyed; and should it survive the original poison, contraction or stricture of the œsophagus may finally bring about death through starvation and exhaustion. The treatment of poisoning by lye is to give the child salad-oil freely and to apply about the throat a compress wrung out of ice-water. Unfortunately, little can be done in these cases, as the poison acts very quickly.

Antiseptics act in much the same manner as lye. Corrosive sublimate or bichloride of mercury is commonly put up in white tablets or lozenges which are not unlike candy. If a child should eat one of these, its death must result in a short time. The poison acts not only by irritating the intestinal canal violently, but also through its directly depressing effects upon the vital organs of the body. Carbolic acid in solution acts locally and generally. In strong solutions it burns the tissues, and when absorbed, paralyzes the vital organs. Nitrate of silver solution is an antiseptic and counter-irritant which is occasionally within the reach of children. Its action is somewhat similar to that of carbolic acid. In the treatment of poisoning by antiseptics which have been swallowed, the child should be made to vomit

as soon as possible. Copious draughts of warm salt and water or of warm water with a little mustard can be taken. The child should be held with the head downward and the fingers carried downward and backward into the throat to irritate the fauces. Following this as much olive oil as possible should be swallowed, or, if time permits its preparation, white-of-egg water should be given very freely. Should symptoms of excessive prostration develop, two teaspoonfuls of whiskey in two ounces of warm water may be injected into the rectum.

Other poisons which act locally as well as generally are tincture of iodine and various liniments. Iodine is detected by the stain upon the mouth, and most liniments have a decided and peculiar odor. The treatment of poisoning from these substances is that already given.

Poisons which do not act locally after absorption and which are commonly within the reach of children are opium in some form, strychnia, and prescriptions containing mercury or belladonna. If there is the slightest suspicion, upon a child becoming ill, that it has swallowed a medicine, it can do no harm to cause the child to vomit. The matter ejected from the

stomach in these cases should invariably be saved for inspection by the physician. When opium is absorbed it causes drowsiness, very small pupils, and very slow breathing. The child may be kept awake until the doctor arrives by giving it strong coffee. In strychnia poisoning the child's muscles become rigid and convulsions follow. A hot bath may be given to relax the muscles and nerves until the doctor arrives. When medicines containing mercury are swallowed by children, the stomach is usually irritated and the child generally vomits. If not, vomiting should be induced, and then oil should be given. Belladonna in medicine produces redness of the face and skin, dryness of the throat, widely dilated pupils, and often a noisy and active delirium. Until the arrival of the physician the child should be given an abundance of water and whiskey or brandy, in small doses proportionate to its age.

Parents and others are often greatly alarmed when children swallow medicines whose strength is not known by the patient or solutions of unknown composition. There can be no harm in causing the child to empty its stomach under such circumstances; and the physician should be informed of the acci-

dent, when, by reference to his notes, he can ascertain what has been taken, and treat the child accordingly.

Prevention of Poisoning.

All medicines and antiseptics used during an illness should be disposed of after recovery. Boracic acid, in solution or powdered, is the best antiseptic for use among children, as it is not, except in large quantities, poisonous. Only this should be kept in a nursery. It is the duty of the trained nurse in attendance upon a case of illness to see that no poisonous substances are left available to children and ignorant persons. During an illness in which such substances must be used the poison should be kept in colored or roughened bottles, plainly labeled, and when not in use they should be placed in a closet or medicine-case out of the reach of children. It is safest to keep them under lock and key. Especial care must be taken in giving doses to children during the night. No poisonous substance should be left in a sick-room during the night, and only those medicines likely to be needed or substances which are not poisonous should be easily available. Nothing should be given to a child in a dark room until it has been

carefully inspected. A mother or care-taker should procure a light and examine the medicine thoroughly before administering it. Physicians will co-operate with mothers in preventing mistakes by having the prescriptions written upon the bottles and explaining to the mother the probable effect or composition of each prescription. Patented medicines and preparations are not thoroughly safe, for the reason that their formulas are not generally known, and it therefore cannot be learned exactly what each contains. If a large dose be taken, the results likely to follow are uncertain.

Acids and Alkalies.

A simple rule of chemistry will guide us in cases where a child swallows a strong acid. The most available bland alkaline substance should be given. Baking-soda and water, lime-water, rochelle salts, bicarbonate of soda, or, in emergencies, plaster scraped from a wall and dissolved in water may be used. If alkalies are swallowed, dilute acids, such as lemon-juice or vinegar and water, should be given. In either case the free administration of oil is indicated.

Convulsions.

The sensitive nervous system of a child is very easily thrown into convulsions. The child closes its mouth tightly, moves its limbs violently, becomes blue in the face, and sinks into a partially unconscious state until the succeeding convulsion. Convulsions may be caused by any condition which severely irritates the nervous system. Acute disturbance of the intestines, irritation about the genital organs, or about the mouth or jaws, mental and nervous shocks, exposure to severe heat or cold may all cause convulsions. Medical aid must be summoned immediately. If the weather be cool or cold, the child should be placed in a hot-water bath (containing ground mustard in the proportion of a handful to a child's bath-tub of water) until the physician arrives. The surface of the body should be gently rubbed until it becomes bright red. A cloth wrung out of cold water should be placed upon the forehead of the child. A soft handkerchief, folded into a plug as large as the thumb, should be placed in the corner of the mouth in order to keep it open and to prevent the child, if it has teeth, from biting its tongue. It can do no harm to empty the

child's bowels in such a case by an injection into the rectum of a pint of warm castile soap-suds. Further treatment must come from the physician, as judgment and skill are necessary in detecting the cause of the convulsions. If there is reason to suspect that the child has swallowed an irritating substance or infected food, it may be made to vomit with advantage.

Heat-Stroke.

Sunstroke is scarcely the proper term to apply to heat-prostration in young children, as they are rarely allowed to expose themselves directly to the rays of the sun. Young children are usually kept quiet during excessive heat, and therefore they do not have the acute and pronounced forms of heat-stroke seen in working-people. A period of excessive heat accounts naturally for the occurrence of heat-stroke. The child becomes listless, apathetic, refuses nourishment, moans almost constantly, and gradually sinks into a stupid, unconscious condition. The surface of the body may be deceptively cool while the internal temperature is raised. So far as atmospheric conditions are concerned, excessive dampness is almost as dangerous as a temperature unusually high.

The care of a child suffering from heat-

stroke is very similar to that necessary for an adult. The child's clothing should consist only of a thin flannel band placed over the abdomen and a diaper. It should be carried to the coolest available spot and given the best air possible. Until the physician's arrival the child should be sponged with cool water containing alcohol in the proportion of a tablespoonful to the quart. A cloth wrung out of cool water should be placed upon the forehead. It is well to empty the child's bowels by an injection of cold water and to give ice-water in teaspoonful doses. Small doses of brandy, ten drops to a child six months old, may be given in ice-water every two or three hours. Albumin water may be given for nourishment. Under no circumstances should milk be allowed to a child suffering from heat-prostration.

If medical advice cannot be procured, the child's life may be saved by taking it at once into better air. The seashore or high land in the country or in the mountains should be sought as soon as possible. Very sick children, if given proper attention, are frequently rescued.

Nose-Bleed.

Children are often much annoyed by the occurrence of nose-bleed. This is frequently an

indication that diseased tissue which should be removed is present in the nostril. A child who suffers from this condition should be given a thorough examination to determine this point. When severe nose-bleed occurs, the child should be laid down with its head and shoulders considerably raised. Iced water may be sprayed or injected into the nostrils, and cloths wrung out of iced water, or ice wrapped in cloths, may be applied over the nose. The child should be encouraged to avoid blowing the nose as much as possible, and should be urged to spit out blood which drops through the posterior part of the nose into the mouth. If the child swallows blood from the nose, a dangerous quantity may be lost before the fact is detected. The child's physician should be summoned if the bleeding becomes pronounced, for it may be necessary to check it by a simple surgical procedure.

Prolapse of the Intestine.

In children who suffer from constipation or who are weakened from prolonged disease it is not uncommon to see prolapse of the lower bowel. This is seldom dangerous, but it may annoy the mother or care-taker, and should receive attention. The child should be placed

upon its back, with its hips raised and the prolapsed intestine thoroughly anointed with vaseline or cold cream. Gentle pressure should be made with the thumb upon the bowel next the skin, and it should be gradually pressed backward within the body. The finger should then be thoroughly oiled and introduced into the bowel, carrying the intestine up beyond the internal ring or sphincter muscle. Such an accident may usually be prevented by injecting warmed olive oil for a bowel movement and by urging the child not to strain when the movement is desired.

CHAPTER XIV.

SURGICAL EMERGENCIES.

SURGICAL emergencies demand prompt professional care, for the reason that a child bears loss of blood badly and is easily thrown into shock. Much can be done to mitigate suffering and to lessen danger by those having charge of children, and hence a knowledge of simple methods of treatment is necessary.

Cuts.

Children are very apt to cut themselves with edged tools, broken glass, etc. A finger is often partially severed by a knife or a hatchet. Free bleeding occurs instantly, and when the child is seen a clot of more or less size surrounds the cut. Until the physician arrives there are three indications: First, to immediately remove by a stream of water all dirt, pieces of clothing, or any other foreign matter which may have gained access to the cut; second, to place a pad of soft clean linen over the cut; and, third, beginning at the tip of the finger or limb, to wrap up the parts firmly over the compress with a bandage. An old sheet, torn into strips two or three inches wide, makes an excellent bandage. For a compress a perfectly clean handkerchief is best. The child should be made to lie down and the limb elevated upon a pillow. It is a natural inclination to give a child stimulants freely. If alcohol be given in considerable quantity, the tendency to hemorrhage is increased. If the child loses much blood and is pallid, one-half a teaspoonful of brandy may be given in hot water. One-half a pint of warm water in which is dissolved one-half a tea-

spoonful of table-salt may be injected slowly and gently as high into the bowel as possible, and allowed to remain for absorption. Should blood soak through the compress, the bandage must not be removed, but another compress and bandage should be applied over the first. Medical aid must be obtained as soon as possible, and there should be prepared for the physician an abundant supply of hot water and clean old linen.

Where a finger or toe is severed by a cut, the parts should be cleansed with clean water and the severed portion put back firmly against the cut surface and retained by a compress or bandage.

Burns.

Among the most common accidents to children are those caused by fire. Especial precaution should be taken in guarding children against fires of all sorts. A substantial wire guard should be kept before open fireplaces and grates, and a child should not be allowed in a kitchen where it can get access to a range. Safety-matches only should be used in nurseries, and burned matches should either be disposed of in the open fire or placed in china receptacles out of the reach of children. Gas-fixtures should not be within reach of a child,

even though it get upon a chair. Especial care should be taken in nurseries that window-curtains are so placed that they can by no accident blow into a burning gas-jet.

It may not be amiss to give the old advice, that should a child's clothing take fire, it can best be put out by stripping its clothing rapidly off and wrapping the child in a blanket. If the outer clothing only is burning, it is best to wrap the child immediately in a blanket, without trying to strip the clothing. When children burn their fingers, as they most frequently do, a cold solution of bicarbonate of soda or a paste made of bicarbonate of soda and cold water and spread upon soft linen may be applied at once. This diminishes pain and heat in the part and is an excellent first dressing. In fact this dressing may be applied over any portion of the body with great comfort and advantage to the patient. In extensive burns considerable shock occurs, and the child should receive moderate stimulation with brandy or whiskey well diluted. If medical advice cannot be procured for some time, and the skin of the burned part has been destroyed and matter begins to form, it is sometimes necessary to use oiled dressings. A dressing of sweet oil and lime-water

answers a useful purpose in such cases. Every effort should be made to put a burned child in the doctor's care as soon as possible, as a scar may often be lessened by prompt and skilful attention to the healing of the burn. If the child be burned in the face, most assiduous care is necessary to lessen a severe scar, and trained nurses are indispensable if the child is to be kept at home. The period of greatest pain following a burn comes a short time after the accident, when the child's system reacts from the shock. Fortunately, medical aid can always be obtained in time to prevent the suffering which would occur at this period.

The recovery from a severe burn is very slow and tedious. Such patients should be placed in hospitals, if abundant trained nursing and proper facilities for the care of the child are not at hand. Such cases require very frequent applications, and the soiled dressings should be burned so soon as removed. In cases where the eyes are burned or irritated by fire the child should be kept in a darkened room and compresses of iced water placed upon the lids and brow. Iced water may be dropped into the eyes as the child desires. Such treatment must not be continued except

during the brief interval before the doctor arrives.

Burns from acids, strong lye, or other chemicals should be treated in the same manner as burns from fire. In burns from acids the soda application at once destroys the effect of the acid and stops the spread of the burn. In burns from alkalies the use of oil with lime-water is especially valuable.

Falls, Fractures, and Sprains.

Children by falling are continually illustrating the fact that the head is heavier than the rest of the body in early childhood. Their remarkable escapes from serious injury are due, in part, to the soft condition of their bones and to the fact that they are seldom left unguarded in exposed positions. If a fall is followed by partial unconsciousness, and the child is pale, it should be put to bed, most of its clothing removed, and its head raised slightly upon a very low pillow. The room should be somewhat darkened and the child's physician summoned at once. The occurrence of bleeding from the mouth, nose, or ears after a severe fall should invariably be reported to the physician.

Young children rarely have complete frac-

tures, but the bones are usually bent, as a twig of a tree may be bent and its fibres broken within the bark. Sprains are very common among children, and are often neglected, because they are not fractures. When a child's limb is injured by fracture or sprain it should be put to bed at once, its clothing removed, and the injured limb placed in a proper position. If it be the lower extremity, the limb should be extended, resting upon the heel, and the injured part placed in what is termed a blanket splint. (Fig. 23.) This is made by folding a shawl wide enough to extend from six to eight inches on each side of the affected joint. The shawl is then rolled from each of its two ends. Two rolls are thus formed, which are turned over, and the injured limb allowed to rest between them. Several pieces of loose bandage are then tied about the limb, holding the rolls close against the injured portion. In this way the limb is immobilized by a very soft and comfortable dressing sufficiently to prevent serious injury. If the skin be broken, and a raw and bleeding surface is present, a piece of perfectly clean soft linen should be placed against the raw surface and the blanket splint applied over that.

FIG. 23.

A blanket splint applied to a child's thigh and leg.

Setting an Injured Limb.

The effort is sometimes made to reduce or set a dislocated or broken limb. Such efforts by untrained persons are dangerous, and should be avoided. In injuries to the lower extremities the limb should be placed straight, if the patient can bear it, resting upon the heel, and kept quiet by such a splint as the blanket. If the effort to place the limb straight causes pain, the patient may be allowed to keep the limb in any position which is most comfortable until further assistance can be procured.

Foreign Bodies in the Air-Passages.

It is not a rare occurrence for children to get into their throats foreign bodies which expose them to the danger of suffocation. Caution should be taken that children be not allowed access to bodies which contain particles that might be removed and drawn into the throat. The writer recalls the case of a child who was choked to death by a piece of cork which became separated from a large cork with which it was playing. Occasionally a child is choked by a piece of bread crust, or meat, or other firm substance which is drawn into the windpipe.

When symptoms of choking appear, do not put anything into the child's mouth at first. The natural inclination is to thrust the finger into the mouth to bring out whatever may be there. This is the worst thing that can be done, as it almost inevitably forces the foreign body further down. Instead of doing this, the child should be grasped firmly by the thighs and held head downward. One hand should be placed upon the forehead and the head very gently moved backward towards the spinal column. A few light strokes upon the back between the shoulders will usually cause the foreign body to be immediately expelled. If this does not succeed, nothing further can be done except to await the arrival of a physician.

Foreign Bodies in the Eye.

A foreign body in the eye will nearly always be removed by the slight movements of the eyeball itself. The injured eye should be immediately closed and covered by a light pad of clean cotton and a bandage or handkerchief. This should remain for several hours, when it may be cautiously removed. The child will then soon know whether or not the foreign body is present.

As soon as possible a physician should be summoned, or the child taken at once to a physician's office. If this cannot be done, the lid may be turned and the foreign body brushed away by the finger covered with a very soft clean handkerchief. To turn the lid, the child's head must be held firmly by an assistant. The hands should be thoroughly washed, and a small, smooth, round object, like a pocket pencil, chosen. The lid to be turned should be grasped firmly at about its centre, as near the edge as possible. The pencil or rod should be laid upon the middle of the lid and the lower edge turned backward over the rod. The inner surface of the lid is thus visible, when the foreign body can usually be seen and removed by the finger.

The eye is peculiarly liable to some kinds of septic infection, and blindness may result in these cases. Should a child have a sore which forms matter, especial precaution is necessary that none of the matter gains access to the eyes. In some instances children are born with infected eyes, and acute inflammation rapidly develops.

The treatment of these cases consists essentially in cleansing the eyes thoroughly with a mild antiseptic solution. This must be pre-

scribed by the physician in attendance, also the method by which it is to be employed. In most cases washing the eye by a stream of fluid or by irrigation is most desirable. Many physicians prefer to have this done by dropping the antiseptic solution into the eyes with a medicine-dropper, the lids being gently dried with clean aseptic cotton. In other cases irrigation is practised by placing the solution in a fountain syringe, putting into the tip of the syringe a medicine-dropper to serve as a nozzle, and so directing the stream that it shall not affect the sound eye. To accomplish this the nurse sits with her lap protected by a rubber apron and with a jar or basin at her feet into which the fluid may run. (Fig. 24.) The sound eye is covered by cotton and a bandage, and the child is turned upon its side with the infected eye lower than the other. The stream of fluid is then allowed to run from the inner angle of the affected eye through the lids, passing upon the outer side into the receptacle beneath. In this manner the eye is cleansed thoroughly with the least possible injury and disturbance. When the eye has been thoroughly cleaned, the lids are very gently dried with aseptic cotton. Caution must be exercised that the fluid used in irrigation does not

FIG. 24.

Douching an inflamed eye with antiseptic solution. The affected eye is the left or lower one.

spatter into the eye of the person who gives the irrigation, as infection and inflammation may result.

The matter which forms in the eyes in these cases is violently infectious and contagious both for children and adults. In countries where no precautions are taken to prevent the spread of inflammation of the eyes many cases of blindness result from this cause. Hence the necessity for burning all pieces of cotton or handkerchiefs used in cleansing the eyes, for thoroughly washing the hands after the eyes have been irrigated, and for cleansing with an antiseptic solution all rubber cloths or utensils employed in such cases.

In addition to the disinfection of the eye, physicians often prescribe cold applications to subdue inflammation. A piece of ice should be placed in a convenient basin or tub, and upon this spread small bits of clean old linen. These are put upon the lids and changed continually night and day. So virulent is the infection in many cases that nothing but the most active and continuous treatment avails to check it. Blindness is such a frightful calamity that every effort should be made to carry out the treatment prescribed in the most thorough and efficient manner.

Foreign Bodies in the Ear.

Insects often gain access to children's ears, and buttons and other small objects are sometimes crowded into their ears during play. The motions of the insect usually cause great irritation and severe pain. A solid body, like a button or a grape-seed, may not at first cause much suffering, but as it becomes softened and begins to swell it will occasion acute distress.

It is often difficult to remove a foreign body from the ear. Hence no attempt should be made with pieces of wire or other improvised instruments, but the physician's aid should be summoned at once. If the child is suffering great pain, hot water at a temperature of from 100° to 110° F. may be dropped into the ear by a medicine-dropper and a hot-water bag laid against the side of the head. If the intruder is an insect, it will soon die, and when its motions cease the child's suffering will be somewhat lessened. If possible, the water dropped into the ear should have been previously boiled, so as to avoid the introduction of impurities and germs from without.

Earache.

This distressing symptom may result from one of several causes and may occasion great suffering. It often comes on at night, sometimes after exposure to cold, and frequently without appreciable cause. The pain is usually referred to the ear only, occasionally radiating into the side of the neck and to the jaws or along the side of the head. No one method of treatment can meet all indications. Until a physician can make an examination, it is safe to use external heat in the form of a hot-water bottle; and if there is reason to think that possibly an insect has gained access to the ear, sterile hot water may be dropped into it as already described. We cannot emphasize too strongly the fact that it is exceedingly dangerous to put objects into the ear or to drop into it unknown substances, as infection may be conveyed and a very serious inflammation result. The physician must take the responsibility of selecting the substance to put within the ear and of directing its method of application.

Foreign Bodies in the Nose.

Children may also introduce seeds, pebbles, or other foreign bodies within the nostrils.

They rarely cause so much suffering as those within the ear or the eye; but if they remain for some time they cause inflammation, with a discharge of matter and mucus from the nostril. When this accident happens, the other nostril should be closed by the finger and the child directed to blow through the impeded side. Very frequently the foreign body is thereby expelled. If the child's head be held down as it blows, a better result is often obtained. Unless the foreign body can be distinctly seen, it is better not to introduce pieces of wire or other substances in the endeavor to bring it away. If the body can be seen, a pair of blunt-pointed pincers or tweezers, with slender blades, should be thoroughly washed with soap and hot water and then cautiously introduced for its removal.

Foreign Bodies Swallowed by Accident.

Pins, pieces of rubber, buttons, and other foreign substances may be swallowed by children. Unless experience had demonstrated the fact it would seem incredible that an object as large as a piece of erasing rubber could readily be swallowed by a child. This accident happened in the writer's experience. The child was laughing, its mouth being wide

open, and another person snapped the rubber directly into its throat. Before the child was aware of what had happened, the rubber had been swallowed.

The natural inclination in these cases is to give a purgative as soon as possible. No greater mistake can be made. The foreign body causes danger by its liability to become fixed in the bowel and thus set up inflammation and perforation. A purgative removes the other contents of the bowel; and while it may move the foreign body along the intestine, it rarely secures its expulsion.

To remove a foreign body which has been swallowed, vomiting should not be induced, but the child's diet should be carefully limited, using only such articles as will fill the intestine completely with a soft and unirritating mass. Such substances are bread and milk and mashed potato. The child's diet for from twenty-four to forty-eight hours should be limited as nearly as possible to these articles, and of these the child may have as much as it desires. At the end of this time a large dose of castor oil or sweet oil should be given, and repeated in a reasonable time. By this treatment the foreign body will usually be expelled from the intestine without injury to the patient.

Foreign Bodies in the Bowel or Bladder.

Children occasionally introduce foreign bodies into the bowel or bladder which may give rise to inflammation with serious results. Medical aid is indispensable in such cases, as the effort to remove such a body requires skill and experience. Its presence may be inferred when the child has difficulty in emptying the bladder, followed by pain and irritation, there being no obstruction at the opening of the urinary channel which prevents the passage of urine. When the foreign body is in the bowel, diarrhœa is apt to occur, accompanied or followed by the discharge of mucus and blood.

CHAPTER XV.

EXTERNAL APPLICATIONS.

MANY of the disorders of children are successfully treated largely by external applications. It is important that these should be understood and the child's physical peculiarities remembered in carrying out this method of treatment.

The Application of Cold.

In severe fever and in diseases of the throat and lungs physicians often prescribe cold applications. The temperature of the water from which the application is to be made will be definitely stated by the physician. If the phrase "a cool compress" be used, it may be taken to mean water of the same temperature as that of the room occupied by the patient. Soft flannel should be selected for these applications and wide enough to cover amply the part of the body under treatment. A stimulating application is usually combined with cold, and this the physician must personally select and prescribe. The compress is wrung out of water in such a manner that, while it is not dry, it does not contain a great amount of moisture. Experience alone can determine the degree of saturation required. The flannel may be sprinkled with the stimulating remedy, or the latter may be added to a definite quantity of water. Thus, a tablespoonful of spirits of turpentine may be added to one quart of water. This compress is wrapped about the trunk of the body, across the chest or abdomen, or around the limb to be treated, and over this is placed one thick-

ness of thin, dry flannel. The compress should be allowed to dry upon the body of the patient and be removed when dry.

In cases of severe disease with high temperature, the physician may direct that an ice-bag be applied over a compress. It is often more comfortable to the patient if the ice for such an application be broken into small pieces, or even pounded, before being put into the ice-bag. An ice-poultice is sometimes prepared by mixing ice with bran and quilting it into cheese-cloth. Cold may be continuously applied by fitting upon the diseased part a coil of rubber tubing sewed on to felt or spongiopiline. Through this coil of tubing iced water may be kept constantly circulating by siphonage. Skull-caps for application to the cranium and sets of tubing to use upon the limbs and abdomen are frequently employed. This method is most efficient. In using cold applications, the general condition of the child must be watched, and should prostration develop, the applications should be abandoned. Stimulants are usually given in conjunction with cold applications in cases where this treatment is employed.

The Application of Heat.

In some cases the application of heat is of great value. Flannel may be used as in the cold applications, the temperature of the water being prescribed by the physician in charge. A temperature of from 90° to 100° F. is required in order to produce any effect by heat. A higher temperature may be added in some cases. A fomentation is a hot application in which the effort is made to retain and continue the heat as long as possible. For this purpose the flannel is applied as before, and over it is placed oiled silk or sheet rubber. The action of such an application is often more powerful than when the impervious material is not used, so caution must be exercised that such applications do not remain too long upon the skin.

The most convenient and usual method of applying heat is by hot-water bags. These can be obtained in various shapes and sizes, fitted for application to all parts of the body. Especial care must be exercised that bags used for either hot or cold water should not leak. Frequently the stoppers in these bags are not perfectly tight, and the patient is thereby greatly annoyed by a slight but constant leakage.

Heat was formerly applied most frequently in the form of poultices. These were composed of some harmless mixture, such as bread and milk, flaxseed, bran, or other materials which retained the heat for a considerable time. Counter-irritation was often made by poultices, and the mustard-poultice was especially selected for this purpose. In making these for children the mustard must be greatly diluted by mixing it with flour or other material.*

For external applications turpentine stupes are most often employed. While irritation of the skin rarely occurs, it may happen to such an extent as to make the child very uncom-

* The following method for making a mustard-poultice whose action is mild and unirritating is ascribed to Dr. James Tyson, of Philadelphia. It is known in the hospitals as the Tyson plaster:

Kitchen mustard, 1 teaspoonful;

Flour, 3 teaspoonfuls;

White of one egg, and molasses sufficient to make a smooth paste.

If molasses is not available, glycerine may be used.

This mixture is unsuccessful unless stirred very thoroughly for at least fifteen minutes. It is then a smooth paste, much milder in action than so-called mustard leaves, and in most cases may be left upon the patient longer than a mustard leaf.

FIG. 25.

Baby in bath. Showing most convenient arrangement of soap, powder, cotton sponges, brush, and all necessaries for the toilet. Screen behind nurse to keep off any possible draught. Screen also useful for hanging long petticoats, dress, etc.

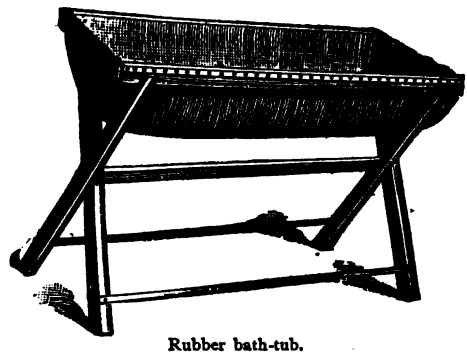
fortable, and occasionally to produce considerable injury. A definite proportion of turpentine should be mixed with the water, and the physician's advice should be asked regarding the strength of the application. It must also be remembered that a hot-water bottle placed against any portion of the body covered by wet flannel very easily blisters and burns. Only dry flannel should be placed between the skin and a hot-water bottle. Older methods of treatment by counter-irritation have very largely disappeared with our increased knowledge of better and more modern ways.

Baths.

The ordinary bath of the young child is a thorough cleansing with soap and tepid or warm water. To avoid the risk of contamination, the head should be cleansed by a wash-cloth or sponge separate from that employed to cleanse the body. Wash-cloths used in sponging or bathing should be repeatedly boiled, and sponges should be thoroughly dried in the sun and frequently renewed. The plainest and purest sorts of soap, devoid of pronounced perfume, should be selected. The child should never be exposed to a draft while bathing (Fig. 25); and if the weather be

cool and the room not thoroughly warm, the child should not be put in a tub, but should be sponged instead. A bathing-apron is of great value while bathing young children. This consists of flannel sufficiently long to cover the lap of the mother or care-taker. While being bathed the child is placed upon the under layer of the bathing-apron, and is kept

FIG. 26.



Rubber bath-tub.

covered with the upper portion during the bath. The limbs are sponged rapidly and gently, and thus the body receives a thorough and brisk going over. In giving a child a tub-bath care must be taken that the child does not slip from the grasp of the care-taker and injure itself against the tub. The rubber bath-tub is especially soft and useful for young children. (Fig. 26.)

Baths for Medicinal Purposes.

The cold bath is sometimes prescribed to reduce temperature. The degree of cold to be administered must be determined by the physician only, as it is a matter of grave importance. The child should be thoroughly rubbed while in the bath, and given a stimulant as soon as it is removed. It must be dried with a rough towel, or with flannel, accompanied by vigorous friction.

The hot bath is sometimes given in cases of infection, when it is desired to produce an eruption. It is also given in cases of severe congestion in the internal organs, when it is necessary to bring blood actively to the surface of the body. The temperature of the water should be prescribed by the physician. Water which feels hot to the mother's elbow or which tastes hot will be hot to the body of a child. A small handful of ground mustard to the ordinary bath will much increase its counter-irritant properties. When giving a hot bath the room must be thoroughly warm, and care must be taken that the child is not exposed to drafts while in the bath or afterwards. If the child is much oppressed by disease, a cloth wrung out of cool water

should be placed upon its head while in the bath.

Medicated baths for children may contain sea-salt, or common salt, or bran, or bicarbonate of sodium, or an antiseptic substance for disinfection. The medicine employed and the preparation of the bath must be as ordered by the physician in charge. In using medicated baths, care must be taken that the fluid does not enter the child's mouth, nose, or eyes.

Counter-Irritation.

By counter-irritation we mean the application of some stimulating substance to the outside of the body to affect the condition of the nerves and blood in the deeper organs. Evidently counter-irritation, if carried to extreme, would injure the external portion of the body by destroying the skin. Dangerous and even fatal burns have followed the improper use of counter-irritation. The substances most commonly used for this purpose are tincture of iodine, camphor in the form of camphorated oil, turpentine, and sweet oil, liniments of various sorts, and mustard. Tincture of iodine may be painted over a painful joint or any portion of the body which is exceedingly sensitive; it leaves a dark, yellowish-brown stain.

If repeated applications be made, the skin, which at first hardens, will gradually die and come off. For young children the iodine is often diluted before application, to avoid excessive irritation. When swallowed, tincture of iodine is an irritant poison, and hence caution must be taken with children in using it. Turpentine and sweet oil are used to rub the chest of a child suffering from a severe cold or bronchitis. One part of spirits of turpentine to five parts of sweet oil may safely be employed with robust children.

Should a too strong counter-irritant be used, blisters will form, and the upper layer of the skin will gradually separate and die. If the irritation is extreme, an ulcer or sore will develop; and if the irritant is absorbed, the child's kidneys or intestines may be affected. Should such an accident happen, the counter-irritation must be at once removed and warm fomentations be applied until the doctor can suggest further treatment.

Injections.

By injections are commonly meant fluids inserted into the bowel to cause a motion of that organ. Such are castile soapsuds and various preparations containing oil or medi-

cines. The following preparations have been found useful, and are recommended, subject to the approval of the child's physician:

(1) Castor oil or olive oil, 1 ounce;
Castile soapsuds (temperature 100° F.), 1 quart.

Mix together as thoroughly as possible; add one dram of spirits of turpentine, thoroughly beaten up with the yolk of one raw egg.

(2) Magnesium sulphate, 2 ounces;
Glycerin, 2 ounces;
Spirits of turpentine, ½ ounce;
Castile soapsuds, 1 quart.

(3) Powdered ox-gall, ½ ounce;
Olive oil, 1 ounce;
Water (temperature 105° F.), 1 pint.

Thoroughly mix. A piece of castile soap is then stirred about in this mixture to make a light lather. The whole, when thoroughly mixed, is at a temperature of 100° F., which is suitable for the purpose. It should be injected as high into the bowel as possible through a large-sized, soft catheter or flexible tube, the finger being inserted into the bowel before the introduction of the tube. If the patient's pelvis be raised considerably it will assist in obtaining a good result. If care be used the patient should suffer no discomfort and should be able to retain the injection for several hours.

The bowel is utilized oftentimes for feeding when the stomach is so disordered that it cannot digest food. Predigested milk or predi-

gested beef, combinations of eggs and milk, or other nutritious substances, may be injected into the bowel and thus absorbed. To do this properly requires experience and skill in nursing, for the bowel must be thoroughly cleansed once or twice daily when such treatment is employed, and great care and gentleness are necessary to secure the retention of the injections. A child should be turned upon its left side, its hips raised upon a folded blanket or pillow, the injection made by a fountain syringe or by a syringe working very smoothly, and the material introduced into the bowel through a soft rubber catheter carefully oiled and passed as high into the bowel as it will go. In this manner, if the child be urged not to strain, sufficient nourishment can be introduced to sustain the child for some time. In a desperate case of pneumonia in an infant, with the aid of skilful nurses, the writer succeeded in feeding a child by injections into the bowel for a week.

In cases of shock and hemorrhage much good may be done the patient by introducing into the bowel an abundant supply of saline solution. One teaspoonful of table-salt to a pint of warm water makes a solution which is exceedingly valuable where blood is lost

or in some cases of severe disease. From four to six ounces of this may be introduced into the bowels of a child and allowed to be absorbed with great advantage, and this may be repeated at intervals of from two to three hours.

In dysentery, injections of iced water are sometimes administered with excellent effect. The frequency and quantity of such injections should be governed by the express directions of the physician.

The Destruction of Intestinal Parasites by Injection.

Children are sometimes annoyed by parasites in the intestine, just above the opening of the bowel. These resemble small bits of white thread or string, and by their constant motion they cause great irritation and distress. They are frequently treated by medicated injections. The bowels are usually emptied by laxative or purgative medicine, and then the rectum is thoroughly washed out with the medicinal preparation as the doctor directs. Usually such treatment is successful in promptly destroying the parasite. It is evident that tape-worm, which lies in the upper part of the intestine, cannot be reached by

injection into the lower bowel; hence the treatment of tape-worm is by the administration of medicines through the mouth.

CHAPTER XVI.

ASEPSIS AND ANTISEPSIS.

So valuable is our knowledge of asepsis and antisepsis in preventing diseases among children, as well as adults, that it is necessary that those who care for children should be informed upon the important facts of this subject. Given pure food, pure water, and pure air, a large number of diseases which attack children would cease to affect them. It is of the utmost importance that these should be secured, if possible, for every child. Where injury to the body occurs, if nothing unclean touches the wound, Nature covers it by what is commonly called a "scab." This is a crust of dried blood, sometimes containing bits of clothing and dirt, but usually free from poisonous germs. If this scab be not removed, the wound heals beneath it without inflammation. Hence, in minor wounds of children, Nature's

dressing should not be removed. Where poisonous germs gain access to the body through a cut or wound, redness, swelling, and the formation of pus result. The wound is then infected. In cases where bacteria multiply in the intestines, in the lungs, in the urinary organs, or in the skin, the discharges from the body may contain germs and spread disease; so the bowel movements of a child suffering from enteric fever in summer may poison water, and through it enter the bowels of another child, who is made ill. The mucus ejected from the lungs in whooping-cough or in measles contains germs which breathed in by another child occasion the disease. Discharges from the genito-urinary organs containing bacteria may poison any portion of the mucous surface of the body in another patient. The perspiration from the skin and the scales which form when the skin dies after inflammation may convey germs to another child, and thus occasion disease.

Asepsis.

By asepsis we mean a condition in which poisonous germs are not present. Thus, absolutely pure water is in an aseptic condition. Surgical dressings which have been permeated

by heat and contain no germs are in an aseptic condition. The air of the sea or of the mountains is practically without germs and is aseptic. In treating patients we are careful to use, so far as we can, aseptic fluids, aseptic food, and aseptic articles. In medical language, we practise asepsis. An aseptic substance cannot cause infection or contagion, because it contains no infectious or contagious germs.

Antisepsis.

It has been found so difficult to make articles perfectly aseptic that, as an additional safeguard, we employ antiseptics. These are chemicals which poison and destroy bacteria. They are used in solutions and in powder, and are applied dissolved in water or upon surgical dressings. Some of them are so strong that they can poison a patient if improperly used. Children are especially susceptible to poisonous antiseptics, and hence physicians are careful to choose those milder substances whose use is practically without danger.

Modern medicine has advanced to that point where patients have a right to demand that the principles of asepsis and antisepsis shall be followed in the treatment of their diseases.

This is especially true with children, many of whose diseases can be prevented and others largely controlled by employing such knowledge. No method of treatment can be called scientific or modern which does not keep these facts constantly before the mind.

CHAPTER XVII.

INOCULATION.

It has been found that substances produced by diseased germs, when passed through healthy animals, have in some cases the property of acting as antidotes for the original disease in the human being. These substances are called antitoxines. They are obtained usually from horses by introducing into the blood of the animals some of the products of disease germs. The horse seems able to resist these poisons, and forms within his blood substances capable of destroying the germs of disease in the human species. The most brilliant success obtained by these remedies is seen in the use of antitoxin in diphtheria. By injecting into patients attacked with diphtheria this substance, the disease is checked, and in

the larger number of cases recovery begins immediately. In an epidemic of diphtheria children may be protected from the disease by injections of antitoxin. Antitoxin has also been successfully used for lockjaw; and the time will probably come when other diseases caused by germs will be cured in the same manner. The introduction of any form of antitoxin to cure disease is termed "inoculation."

Vaccination.

It was observed by Jenner and others that those who milked large numbers of cows during epidemics of smallpox in England had sores upon their hands which they contracted from ulcerations upon the udders of the animals. These persons, however, escaped smallpox, while many who had not these sores upon their hands suffered from the disease. This led Jenner to take some of the matter from the sores upon the cow and to introduce it into the blood of human beings by rubbing it upon an open wounded spot. Persons thus inoculated with matter from the young cow—called "vaccine matter"—were vaccinated and did not have smallpox. If it is true that water puts out fire, then it is true that vaccination prevents smallpox. A human being vacci-

nated properly once in five years is safe from smallpox.

It is evident that only vaccine matter which is free from germs of inflammation should be used for vaccination; hence the most reliable and clean vaccine matter must be employed. Care must also be taken that vaccination be done in an aseptic manner, that the needle or instrument used in wounding the skin be sterilized, and that the skin itself be cleansed and made as nearly sterile as possible, that clean linen be used about the site of vaccination, and that the hands of the vaccinator be thoroughly clean. The vaccinated spot must be protected from irritation caused by the clothing, and from the access of all impurities. Under these conditions vaccination may be successfully done upon children at any age and without causing serious inconvenience or illness. The writer has repeatedly vaccinated nursing infants without the slightest constitutional disturbance.

On the other hand, unclean vaccination and lack of care in protecting the vaccinated spot from dirt and contamination may result in death from blood-poisoning or lockjaw.

It is now thought best to cover the vaccinated spot with a transparent shield, which

is worn until the spot has thoroughly dried and the reaction of vaccination begins. When a discharge occurs, the shield should be removed, the skin about the vaccinated spot thoroughly washed with warm water and soap, and then with alcohol, and a thoroughly clean dressing applied. Sterile gauze kept in place by a sterile bandage is needed to prevent irritation. Sterile or mildly antiseptic ointment may be spread upon the gauze. If the dressings be suitably applied and faithfully worn no serious result will follow vaccination.

The question is often asked, "When shall vaccination be done?" Whenever danger of infection by smallpox arises. The age of a child has nothing to do with the question of vaccination. A child may be vaccinated the day it is born, if necessary, without especial danger. If vaccination be done upon the leg, and the reaction is vigorous, the child must be kept quiet for a day or two when the reaction is greatest. Even then serious inflammation in properly treated cases does not occur.

DIETARY.

Albumin or White-of-Egg Water.

STIR the whites of two eggs without heating into one-half pint of ice-water. Add enough salt or sugar to make palatable.

Arrow-Root.

Take one-pint of sweet milk; let it come to the boiling point; then mix two teaspoonfuls of arrow-root with enough cold water to form a thin paste, and add it to the hot milk. Let it boil for fifteen or twenty minutes, stirring to keep it from scorching. Season to taste. Arrow-root can be made with half milk and half water.

Barley Water,—Gruel or Jelly.

Wash two ounces of pearl barley with cold water. Boil for five minutes in fresh water; throw both waters away. Pour on two quarts of boiling water; boil down to a quart. Strain (if patient desires), and flavor with thinly-cut lemon-rind. Add sugar to taste.

To make jelly, put two tablespoonfuls of washed pearl barley into a saucepan with one and one-half pints of water. Boil slowly down to a pint. Strain, and allow liquid to set into a jelly.

Another way to make barley gruel: Take one-half pint of barley jelly, add one-half pint of milk. Boil slowly for twenty minutes. A little salt will improve taste.

Another way to make barley jelly: Take six tablespoonfuls of pearl barley, wash thoroughly; add one

quart of cold water, and boil slowly for three hours; then press the grain thoroughly through a fine strainer. This should make one-half pint of jelly. An agate or porcelain-lined boiler should be used.

Beef-juice.

Cut a thin, juicy steak into pieces one and one-half inches square, and brown separately one and one-half minutes in a frying pan. Force through a hot meat squeezer or lemon squeezer, and flavor with salt and pepper. May be served hot or cold.

Beef Sandwich (Scraped).

Scrape pulp from a good steak, season to taste, and spread thinly on thin slices of buttered (slightly) bread.

Beef Tea.

One pound of steak from top of round, one pint of cold water, salt. Wipe the steak, remove all fat, and cut into small pieces. Soak for three hours in the cold water; then place on back of range for one hour, care being taken that the heat is not sufficient to coagulate the juices. Strain, season, and reheat; same care in regard to heating juices as before.

Chicken Broth.

Dress and clean a chicken. Remove skin and fat, disjoint, and wipe with a wet cloth. Put into kettle with one and a half quarts of cold water; heat to boiling point. Skim, and cook slowly until meat is tender. When half done, add one and one-half teaspoonfuls of salt and a few grains of pepper. Cool thoroughly and skim fat. Reheat and serve.

Clam Broth.

Wash thoroughly six large clams in the shell; put in kettle with one cup of water; bring to a boil, and keep there one minute; the shells open, the water takes up the proper quantity of juice, and the broth is ready to pour off and serve hot.

Mutton Broth.

Add one pound of loin of mutton to three pints of cold water; boil slowly until very tender, adding one teaspoonful of salt when half done. Strain, and when cold skim off fat. Three tablespoonfuls of rice or the same amount of barley added makes it more palatable.

Oyster Broth.

To one dozen oysters, with liquor, add one cup of cold water. Let it come to a boil, and boil for five minutes. Strain and season.

Veal Broth.

Mince one-half to one pound of lean veal; pour over it a pint of cold water. Let it stand for three hours, then slowly heat to boiling point. After boiling briskly for two minutes strain through a fine sieve and season with salt.

Buttermilk.

Buttermilk should be prepared from good, pure cream by a churning process. After the butter is formed, the milk should be strained and kept well covered in a cool place.

Corn Gruel.

Two tablespoonfuls of Indian meal, one tablespoonful of flour, one-half teaspoonful of salt, three cups of boiling water. Mix the meal, flour, and salt. Add enough cold water to make a thin paste. Add to boiling water, and boil gently one hour. Dilute with milk or cream. A richer gruel may be made by using milk instead of water and cooking three hours in double boiler.

Egg and Lemon.

Beat one egg with one tablespoonful of sugar until very light. Add three tablespoonfuls of cold water and the juice of a small lemon. Put in a glass with pounded ice and drink through a straw.

Egg and Milk.

Beat milk with salt to taste. Beat white of egg until stiff, add egg and milk, and stir.

Eggnog with Stimulant.

Make mixture same as for plain eggnog and pour over it one tablespoonful of wine or brandy diluted with same quantity. Shake well and serve at once.

Eggnog without Stimulant.

Beat an egg slightly and add one teaspoonful of sugar and a few grains of salt. To this add one glass of milk. Mix thoroughly and strain. A slight grating of nutmeg, if desired.

Enemata (Nutrient) Containing Milk.

Peptonize the milk by the warm process, then add whatever other ingredients the physician may order.

Flaxseed Tea.

Remove the black specks from two tablespoonfuls of whole flaxseed. Add to it one heaping tablespoonful of white sugar and a little lemon-juice. Pour on these materials one quart of boiling water. Let it stand in a hot place for four hours. Strain and serve either hot or cold.

Hominy Jelly.

One-half cup of fine hominy added to one quart of boiling water and one-half teaspoonful of salt. Cook in double boiler down to one pint. Time, three hours usually.

Junket.

One cup of milk, one tablespoonful of sugar, one tablespoonful of sherry wine, one teaspoonful of liquid rennet. Heat milk until lukewarm; add sugar and wine; when sugar is dissolved add rennet. Turn into a small mould and let it stand in a cool place until firm. Serve with sugar and cream. For flavoring, cinnamon or nutmeg may be used in place of wine.

Kumiss.

One quart of milk, one and one-half tablespoonfuls of sugar, one-third of a yeast-cake dissolved in one tablespoonful of lukewarm water. Take ordinary beer-bottles with shifting corks. Heat milk until lukewarm; add sugar and dissolve yeast-cake. Fill bottles to within one and one-half inches of top; cork and invert. Let it stand for six hours at a temperature of 80° F. Place on ice, and use after twelve hours. Much waste can be

saved by preparing the bottles with ordinary corks wired in position and drawing off the kumiss with a champagne tap.

Milk Peptonized.

Cold Process.—Into a clean quart bottle put one peptonizing powder (extract of pancreas, five grains; sodium bicarbonate, 15 grains) or the contents of one peptonizing tube (Fairchild). Add one teacupful of cold water and shake; add one pint of fresh, cold milk, and shake mixture again. Pack bottle in ice, and use when required without subjecting to heat.

Warm Process.—Mix peptonizing powder with water and milk as described above; place bottle in water so warm that the entire hand can be held in it for a minute without discomfort. Keep bottle there ten minutes, and then pack in ice.

Milk Punch.

One cup of milk, one teaspoonful of sugar, one teaspoonful of brandy, a few grains of salt. Dilute brandy with water (one tablespoonful), add sugar and salt, then milk. Shake thoroughly, serve at once.

Oatmeal Water,—Gruel or Jelly.

One cup of fine oatmeal, two quarts of water (which has been boiled and cooled). Add oatmeal to water, and keep in a warm place (at a temperature of 80° F.) one and one-half hours. Strain and cool.

Gruel.—One-half cup of coarse oatmeal, three cups of boiling water, one teaspoonful of salt. Add oatmeal and salt to boiling water, and cook in a double boiler three hours. Force through a strainer, and dilute with milk or cream. Reheat and season.

Purée of Celery.

Take six large stalks of celery, wash and clean thoroughly, add enough water to cover the celery, let it boil until quite soft, press through a fine strainer, and boil the liquor again for a short time. Then strain again and add one pint of milk, two small teaspoonfuls of arrow-root mixed with cold water, a little salt. Boil for twenty minutes additional.

Purée of Carrots.

To the liquor in which a knuckle of veal has been boiled add twelve large carrots. Boil until the carrots will mash through a sieve. Put them through, and then let them boil in the broth until it is quite smooth. Add one-half pint of cream and a little salt.

Purée of Corn.

Take six large ears of corn, grate them, and add one pint of water. Let boil slowly one hour, stirring frequently to keep from sticking. Strain through fine strainer, pressing out all the liquid. To the liquid add one pint of milk, two small teaspoonfuls of arrow-root, a little salt, and boil twenty minutes.

Purée of Lima Beans.

Take one quart of lima beans, add one quart of cold water; boil until quite soft; then press through fine strainer. To this add one pint of milk, one small teaspoonful of arrow-root mixed with cold water, and salt to taste. Boil for fifteen or twenty minutes.

Purée of Peas.

To one pint of fresh peas add three pints of water. Boil until quite soft, then press through strainer. To this add one pint of milk, one small teaspoonful of arrow-root and a little salt, and boil fifteen or twenty minutes.

Purée of Spinach.

Three handfuls of spinach, one quart of milk, one-half pint of cream, one tablespoonful of butter, and a small tablespoonful of flour; pepper and salt. Wash spinach clean, and boil in plenty of water with a little salt. When thoroughly cooked, strain from the water and mash the spinach through a fine wire sieve. Heat the butter, and mix the flour in the hot butter until perfectly smooth. Add milk and cream. Then put the spinach into the milk and serve very hot. If a richer soup is needed, take less milk and more cream.

(In spite of the care taken to indicate proportions for purées, it is almost impossible to give the exact proportions, because certain vegetables are much more easily thickened than others. Therefore it is advisable, if the purée becomes too thick, to add a little more water or bouillon in which the vegetable was boiled. If there is no more of this, then add simply a small quantity of boiling water, taking care never to go beyond one quart of liquid, as with the proportion of vegetables given that is sufficient for four adults.)

Rice Water,—Gruel or Jelly.

Pick over and wash two tablespoonfuls of rice. Add two cups of cold water and boil until the rice is soft.

Strain, and add milk or cream if desired. Reheat and season with salt.

Prepare gruel or jelly as pearl barley.

Another Way to Make Rice Gruel.

Take one-half pint of rice jelly; add one-half pint of milk. A little salt or sugar will improve taste. Boil twenty minutes, being careful not to scorch.

Another Way to Make Rice Jelly.

Take four tablespoonfuls of rice, wash thoroughly. Add one quart of water, boil slowly until the rice is quite soft and strain through a fine strainer, pressing the grains well through the strainer. Rice is best boiled in a double boiler.

Toast Water.

Equal measures of stale bread, toasted, and boiling water. Cut the bread in inch slices, put in pan, and dry thoroughly in a slow oven until crisp and brown. Break in pieces, add water, and let stand one hour. Strain through cheese-cloth and season. Serve hot or cold.

Wheat Water,—Gruel or Jelly.

Using the entire wheat, prepare the same as barley water.

Gruel.—One tablespoonful of flour, two cups of milk, pinch of salt. Mix flour with one-fourth cup of milk. Scald remaining milk in double boiler, add flour paste, and cook thirty minutes. Season.

CoLibrì

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